The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

PIPELINE ENGINEERING AND SAFETY DIVISION

INCIDENT REPORT

214 Lunenburg Street, Fitchburg, Massachusetts
February 5, 2013

PIPELINE ENGINEERING AND SAFETY DIVISION

Location: 214 Lunenburg Street, Fitchburg, Massachusetts

February 5, 2013

Unitil

Estimated Property Damage: $632,000*

Injuries: None

Report Issued: May 7, 2015

*Estimated by Unitil

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I. INTRODUCTION

A. Scope of Investigation

The Massachusetts Department of Public Utilities ("Department"), Pipeline Engineering and Safety Division ("Division"), pursuant to G.L. c. 164, § 105A and a Federal Certification Agreement as provided for in 49 U.S.C. § 60105, has investigated a natural gas release at 214 Lunenburg Street, Fitchburg, Massachusetts, on February 5, 2013 ("Incident")[1]. The release of gas contributed to an explosion, fire, and over $632,000 in property damage to the dwelling (Exh. 1). The operator of the natural gas facilities at the Incident is Unitil ("Unitil" or "Operator"). There were two reported injuries and no fatalities.

As part of the Department's annual certification process by the United States Department of Transportation (U.S. DOT"), the Department must report to the U.S. DOT:

> each accident or incident . . . involving a fatality, personal injury requiring hospitalization, or property damage or loss of more than an amount the Secretary establishes... and any other accident the [Department] considers significant, and a summary of the investigation by the [Department] of the cause and circumstances surrounding the accident or incident. 49 U.S.C. § 60105(c).

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[1] Incident means any of the following events:
(1) An event that involves a release of gas from a pipeline, or of liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences:
(i) A death, or personal injury necessitating in-patient hospitalization;
(ii) Estimated property damage of $50,000 or more, including loss to the operator and others, or both, but excluding cost of gas lost;
(iii) Unintentional estimated gas loss of three million cubic feet or more;
(2) An event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident.
(3) An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraphs (1) or (2) of this definition.

49 C.F.R. Part 192, § 192.3.

The purpose of this report is to inform the U.S. DOT as to the cause and circumstances surrounding the Incident.

The Department has established procedures for determining the nature and extent of violations of codes and regulations pertaining to the safety of pipeline facilities and the transportation of gas, including but not limited to, 220 C.M.R. §§ 100.00 through 113.00. See 220 C.M.R. § 69.00 et seq. The Division also enforces the U.S. DOT safety standards for gas pipeline systems as set forth in 49 C.F.R. Part 192 ("Part 192"). G.L. c. 164, § 105A.

B. Overview of Incident

At 5:30 p.m. on February 5, 2013, Unitil Gas Control received a report from the Fitchburg Fire Department of an explosion at 214 Lunenburg Street, Fitchburg, Massachusetts (Exh. 2). Gas Control immediately dispatched a Unitil technician who arrived on site at 5:32 p.m. (Exh. 2). At approximately 5:56 p.m. on February 5, 2013, Unitil notified the Department of the Incident (Exh. 2).

Upon arrival the technician reported to the Fitchburg Fire Chief and additionally worked with the Fitchburg Fire Department on emergency response and make safe actions (Exh. 2). The technician also contacted Unitil's Gas Control and requested additional resources from the gas street department, electric line crew, Dig Safe, local Unitil supervisory and management personnel (Exh. 2). A gas distribution street crew and one additional technician arrived on site at approximately 5:40 p.m. and began aeration, pinpointing, and other make safe actions (Exh.2). At approximately 6:20 p.m. the area was made safe by excavating and securing the gas leak on a four (4) inch cast iron gas main (Exh. 2).

A full circumferential fracture was discovered and repaired by the installation of a split sleeve clamp on the gas main (Exh. 3). The leaking gas appears to have migrated through the sub-surface soil into the basement of 214 Lunenburg Street Front, which accumulated, ignited from an unknown source, and created an explosion. The explosion significantly destroyed the property at 214 Lunenburg Street, Fitchburg, rendered another property, 5 Lunenburg Street damaged beyond repair, and caused minimal to moderate damage to ten other properties (Exh. 4). Four motor vehicles were also damaged. Two people were inside the structure at the time of the incident; they were accounted for and treated on site by the Red Cross. An alleged injury (nature and extent unknown) was reported three weeks later.

II. THE DEPARTMENT'S INVESTIGATION

A. Description of the Site

Lunenburg Street is located in a neighborhood of residential and commercial buildings in Fitchburg, Massachusetts. The building at 214 Lunenburg Street, Fitchburg, was a one level commercial structure built about 1901 on 0.607 acres (Exh. 5). It had a brick exterior and a membrane roof cover (Exh. 5). Photos of the foundation taken after the incident show the area where the office was located; it was partly constructed of concrete block foundation (Exh. 6).

B. Drug and Alcohol Testing Report

Drug and Alcohol testing was not required because Unitil employees were not working in the area at the time of the Incident.

C. 214 Lunenburg Street Front

1. Service Installation and Description

Unitil records indicate the Operator installed a one and a half (1½) inch bare steel gas service line[2] on October 9, 1942, to the building at 214 Lunenburg Street Front, Fitchburg, from a four (4) inch cast iron gas main underlying Linwood Street (Exh. 8). Unitil records also indicate that this gas service was plugged but not abandoned at the gas main on November 16, 1945 (Exh. 8). Records also indicate the Unitil installed a three quarter (3/4) inch steel gas service to provide gas service to 214 Rear Lunenburg Street, Fitchburg, which was abandoned on November 8, 1983 (Exh. 9). A new gas service was installed to 214 Rear Lunenburg Street on September 27, 2013 (Exh. 9). Both gas services were connected to an existing eight (8) inch coated steel gas main underlying Lunenburg Street.

2. Leak Survey and Repair Records for 214 Lunenburg Street

According to the Operator's winter patrol records, Linwood Street and the area of 214 Lunenburg Street were gas leak surveyed during the winter months for the period of December 1, 2009, through February 5, 2013, as follows (Exh. 10):

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[2] Service line means a distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter. Part 192, § 192.3

- Winter months 2009 – 2010 the area was surveyed 5 times;
- Winter months 2010 – 2011 the area was surveyed 6 times;
- Winter months 2011 – 2012 The area was surveyed 3 times, this can be attributed to a warmer than average winter with little to no frost conditions; and
- Winter months 2012-2013 the area was surveyed 8 times.
- During the periods noted, no gas leak was detected in the area

On February 5, 2013, Unitil performed gas leakage surveys on Linwood Street, Lunenburg Street, and nine (9) other streets that were in the area of the Incident (Exh. 11).

The Operator presented records indicating that on October 20, 2009, and August 15, 2012, it had conducted gas leak surveys of the gas service to 214 Lunenburg Street Rear, Fitchburg (Exh. 12). The operator determined that there were no gas leaks present and the inspection performed in 2012 noted that the gas service piping was in good condition (Exh. 12).

The Operator presented records indicating that it had received one Dig Safe[3] request for Lunenburg Street for soil borings and had received no Dig Safe requests for Linwood Street.

D. The Gas Main Underlying Linwood Street

1. Description of the Gas Main Underlying Linwood Street

The Operator installed a four (4) inch cast iron gas main[4] underlying Linwood Street on September 16, 1929, at a depth of approximately 36 inches (Exh. 12). The gas main operates

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[3] The purpose of the Dig Safe Law is to prevent damage to underground utilities. Dig Safe, Inc. ("Dig Safe") is a communication network that notifies utility companies about planned excavation projects. After an excavator notifies Dig Safe of a proposed project, member utility companies will physically go to the site of the planned excavation and mark the location of their underground facilities with paint or stakes.

[4] A gas main is a distribution line that serves as a common source supply for more than one gas service line.

at low pressure and has an MAOP[5] of 14 inches water column[6] (Exh. 13). Records indicate that the operating pressure on February 5, 2013, was 11 inches water column (Exh. 13).

2. History of Repairs of the Gas Main Underlying Linwood Street

The Operator reported that it had performed no repairs of the four (4) inch cast iron gas main underlying Linwood Street for the period of January 1, 2009, through February 5, 2013, (Exh. 14).

3. Gas Main Repair on February 5, 2013

On February 5, 2013, Unitil excavated and exposed the four (4) inch cast iron gas main. A circumferential crack was discovered approximately four (4) feet north of Lunenburg Street. Unitil employees stopped the flow of gas by installing a split sleeve clamp on the four (4) inch cast iron gas main (Exh. 3).

4. Replacement of the Gas Main following the Incident

On February 6, 2013, the Operator replaced the four (4) inch cast iron gas main underlying Linwood Street and installed a two (2) inch low pressure high density polyethylene[7] gas pipe from Lunenburg Street to the end of Linwood Street (Exh. 2).

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5 Maximum allowable operating pressure (MAOP) means the maximum pressure at which a pipeline or segment of a pipeline may be operated under this part. Part 192, § 192.3

6 A pressure unit representing the pressure required to support a column of water one inch high. Usually reported as inches W.C. (water column); 27.68 inches of water is equal to one pound per square inch.

7 *High-density polyethylene (HDPE) (0.941* < density < 0.965) is a thermoplastic material composed of carbon and hydrogen atoms joined together forming high molecular weight products.

5. Odor Testing

The Commonwealth of Massachusetts requires that operators of natural gas distribution systems odorize to a more stringent level[8] than the federal requirements. Unitil reported odorant levels at 12 locations in four (4) towns. The range of odorant detected was 0.00% to 0.14% threshold which met the Massachusetts standard (Exh. 15).

III. ANALYSIS OF THE PIPELINE SEGMENT

Massachusetts Materials Research Inc. (MMR) performed a metallurgical analysis of a segment of the four (4) inch cast iron gas main segment that was excavated from Linwood Street (the site of the Incident). The MMR Report concludes that:

> Based on the results performed of the following examinations of the pipe segment: radiographic inspection, visualization examination of fracture surface, binocular microscope examination, scanning electron microscope examination, energy dispersive x-ray spectroscopy, metallurgical examination, wall thickness measurements, chemical analysis, and ring crush, tensile, charpy impact testing, it appears the pipe fracture is typical of grey cast iron pipe breaks caused by bending forces. Typically, a failure such as this (fracture origin at 6 o'clock with a transverse break away from a bell joint) results from the subsidence of fill underneath the break site. Additionally, frost heave differentials along a pipe's length can cause upward thrusting that produces bending loads. While there is no hard evidence for fill subsidence at the break site (i.e. no reported flooding, washouts, or earthquake activity known to MMR), weather data for the week prior to failure reveals a couple days of anomalously warm temperatures for January coupled with ¾-inch of rainfall, followed by a plunge to more seasonable temperatures and dry weather for the beginning of February. This type of weather pattern can result in differences in thawing, refreezing, and frost heaving in a local area depending upon soil composition and saturation. If the wood impingement type mark noted on the pipe is due to a tree root, then this section may have been braced by that root, influencing the location of the break during frost heaving. The pipe in general was typical chemically of older cast irons and metallurgically of a spin cast pipe. While evidence of graphitic corrosion that

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[8] A combustion gas in a distribution line shall have a distinctive odor of sufficient intensity so that a concentration of fifteen hundredths of one percent gas in the air is readily perceptible to the normal or average olfactory senses of a person coming from fresh uncontaminated air into a closed room containing one part of the gas in 666 parts of air. C.M.R. 220, § 101.06(20).

had penetrated the pipe wall was present, this was not located at the fracture site. The fracture region was not excessively affected by graphitic corrosion"[9].

NOTE:

The black polymeric substance used by Unitil to seal the crack location prior to applying the clamp served to protect and preserve the fracture surface. The field clamps are applied using a soap solution as a lubricant and that solution can significantly corrode a cast iron fracture surface while the pipe awaits analysis. Between the protection offered the fracture surface and the ease with which the substance peeled away from the pipe, its use on gas main fractures should be encouraged as part of the clamping procedure. Proper preservation of an iron fracture surface is a challenge even when adverse conditions in an excavation site aren't involved. This substance was reported to be easy to apply and shouldn't represent an inconvenience to field personnel working to control and repair a leak. Its potential benefits in terms of fracture preservation appear disproportionately large.

IV. FINDINGS

A. The Incident

1. On February 5, 2013, at 5:30 p.m., Unitil Gas Control received a call from the Fitchburg Fire Department of an explosion at 214 Lunenburg Street, Fitchburg.

2. At 5:31 p.m., Unitil dispatched a technician to 214 Lunenburg Street.

3. Members of the Fitchburg Fire Department were on site when the Unitil technician arrived on site 5:32 p.m.

4. Unitil reported that a second technician arrived on site at 5:40 p.m. Three additional Unitil employees arrived at approximately 5:45 p.m.

5. The first technician to arrive shut off gas to 5 Linwwod Street that which was in close proximity to the Incident.

6. Unitil reported that at approximately 5:30 p.m. an explosion occurred at 214 Lunenburg Street.

7. At approximately 5:56 p.m. on February 5, 2013, Unitil notified the Department of the Incident.

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[9] Copies of the MMR Report can be obtained by contacting: *Massachusetts Materials Research Inc., P.O. Box 810, 1500 Century Drive, West Boylston, MA 01583.*

8. The Fitchburg Fire Department estimated the property damage to 214 Lunenburg Street to be $95,000 and the contents loss to be $500,000. Several other structures were also damaged.

B. The Gas Main Underlying Linwood Street

1. Unitil installed a four (4) inch cast iron gas main underlying Linwood Street in September, 1929.

2. The MAOP of the gas main is 14 inches water column.

3. The operating pressure of the gas main at the time of the Incident was approximately 11 inches water column.

4. Unitil reported that they had no records of performing any maintenance activities on the gas main prior to the Incident.

5. Unitil reported that they had no records of any leak history on the gas main prior to the Incident.

6. On April 4, 2013, Unitil reported in the Department of Transportation, Pipeline and Hazardous Materials Safety Administration Incident Report that the depth of the gas main was 28 inches.

7. Unitil installed a two (2) inch low pressure high density polyethylene gas pipe from Lunenburg Street to the end of Linwood Street to replace the four (4) inch cast iron gas main.

C. The Recovered Gas Pipe

1. Following the Incident, Unitil removed a section of the gas main from Linwood Street measuring approximately 48 inches long.

2. The gas pipe was blocked with wood on both sides and a nylon strap was wrapped around the section of gas main for safe transport.

3. The gas pipe segment had a circumferential fracture.

4. The gas pipe was transported to MMR, Inc. for analysis.
5. MMR's findings concluded that the likely cause of the failure of the pipe was due to bending loads caused by climate cycling of frost in the area of the gas pipe.

D. The Gas Service to 214 Lunenburg Street Front

1. Unitil records indicate the gas service line was a one and a half (1½) inch bare steel gas pipe installed in October, 1942.

2. The bare steel gas service was connected to the four (4) inch cast iron gas main underlying Linwood Street.

3. Unitil records did not provide an installation depth of the gas service pipe.

4. Unitil records indicate that the gas service pipe installed at 214 Lunenburg Street Front, was plugged in November, 1945, but not abandoned at the gas mains.

5. Unitil reported that there had been no gas leaks identified in the past five (5) years.

6. Following the Incident, Unitil pressure tested the gas service line to 214 Lunenburg Street Front; the pressure test of the gas service line demonstrated no pressure loss.

7. The gas service to 214 Lunenburg Street Front was abandoned at the gas main after the pressure test was completed on February 5, 2013. The gas service tee was removed and a threaded cap was installed on the gas main.

E. The Building at 214 Lunenburg Street Front

1. The structure at 214 Lunenburg Street Front was a single commercial brick building with a membrane roof cover and cement block foundation under the west side of the structure.

2. The building is classified as retail store and was built in approximately 1910 on 0.607 acre lot.

3. The structure at 214 Lunenburg Street Front was connected to the city water system from a service line connected to a water line main underlying Linwood Street.

4. Inside the building, the water service was in close proximity to the gas service.

F. The Release of Gas

1. The source of the release of gas was the fractured four (4) inch cast iron gas main underlying Linwood Street.

V. CONCLUSIONS

The circumferential fracture in the four (4) inch cast iron gas main underlying Linwood Street was the source of the release of gas. The release of gas migrated into 214 Lunenburg Street, Front, accumulated and was ignited by an undetermined source resulting in an explosion. A city water service was exposed during the excavation of the gas service and it was located approximately 12 inches away from the gas service. The water service served 214 Lunenburg Street, Front. The foundation in the portion of the building where the gas and water services were located was constructed of concrete block.

The Pipeline Division was unable to ascertain the path taken by the leaking gas from the broken gas main on Linwood Street, into the basement of 214 Lunenburg Street, Front. The findings and conclusion in the MMR Report are reasonable and based upon substantial and specific evidence.

EXHIBIT 1

Department of Transportation Incident Report

NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed 100,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $1,000,000 as provided in 49 USC 60122.

OMB NO: 2137-0522
EXPIRATION DATE: 02/28/2014

U.S Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Original Report Date:	04/04/2013
No.	20130037- 15631
	(DOT Use Only)

INCIDENT REPORT - GAS DISTRIBUTION SYSTEM

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2137-0522. Public reporting for this collection of information is estimated to be approximately 10 hours per response, including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, PHMSA, Office of Pipeline Safety (PHP-30) 1200 New Jersey Avenue, SE, Washington, D.C. 20590.

INSTRUCTIONS

Important: Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the PHMSA Pipeline Safety Community Web Page at http://www.phmsa.dot.gov/pipeline.

PART A - KEY REPORT INFORMATION

Report Type: *(select all that apply)*	Original:	Supplemental:	Final:
	Yes		
Last Revision Date			
1. Operator's OPS-issued Operator Identification Number (OPID):	5200		
2. Name of Operator	FITCHBURG GAS & ELECTRIC LIGHT CO		
3. Address of Operator:			
3a. Street Address	285 JOHN FITCH HIGHWAY		
3b. City	FITCHBURG		
3c. State	Massachusetts		
3d. Zip Code	01420		
4. Local time *(24-hr clock)* and date of the Incident:	02/05/2013 17:30		
5. Location of Incident:			
5a. Street Address or location description	214 Lunenburg St		
5b. City	Fitchburg		
5c. County or Parish	Worcester		
5d. State:	Massachusetts		
5e. Zip Code:	01420		
5f. Latitude:	42.584906		
Longitude:	-71.7894		
6. National Response Center Report Number:			
7. Local time *(24-hr clock)* and date of initial telephonic report to the National Response Center:	02/05/2013 20:30		
8. Incident resulted from:	Reasons other than release of gas		
9. Gas released:			
- Other Gas Released Name:			
10. Estimated volume of gas released - Thousand Cubic Feet (MCF):			
11. Were there fatalities?	No		
- If Yes, specify the number in each category:			
11a. Operator employees			
11b. Contractor employees working for the Operator			
11c. Non-Operator emergency responders			
11d. Workers working on the right-of-way, but NOT associated with this Operator			
11e. General public			
11f. Total fatalities (sum of above)			
12. Were there injuries requiring inpatient hospitalization?	No		
- If Yes, specify the number in each category:			
12a. Operator employees			
12b. Contractor employees working for the Operator			
12c. Non-Operator emergency responders			
12d. Workers working on the right-of-way, but NOT associated with this Operator			
12e. General public			
12f. Total injuries (sum of above)			
13. Was the pipeline/facility shut down due to the incident?	Yes		
- If No, Explain:			

- If Yes, complete Questions 13a and 13b: *(use local time, 24-hr clock)*	
13a. Local time and date of shutdown:	02/05/2013 18:30
13b. Local time pipeline/facility restarted:	02/06/2013 14:00
- Still shut down? (* Supplemental Report Required)	
14. Did the gas ignite?	No
15. Did the gas explode?	Yes
16. Number of general public evacuated:	2
17. Time sequence *(use local time, 24-hour clock)*:	
17a. Local time operator identified Incident:	02/05/2013 17:30
17b. Local time operator resources arrived on site:	02/05/2013 17:35

PART B - ADDITIONAL LOCATION INFORMATION

1. Was the Incident on Federal land?	No
2. Location of Incident	Private property
3. Area of Incident:	Underground
Specify:	Under soil
If Other, Describe:	
Depth of Cover:	28
4. Did Incident occur in a crossing?	No
- If Yes, specify type below:	
- If Bridge crossing --	
Cased/ Uncased:	
- If Railroad crossing --	
Cased/ Uncased/ Bored/drilled	
- If Road crossing --	
Cased/ Uncased/ Bored/drilled	
- If Water crossing --	
Cased/ Uncased	
Name of body of water (If commonly known):	
Approx. water depth (ft):	

PART C - ADDITIONAL FACILITY INFORMATION

1. Indicate the type of pipeline system:	Natural Gas Distribution, privately owned
- If Other, specify:	
2. Part of system involved in Incident:	Main
- If Other, specify:	
2a. Year "Part of system involved in Incident" was installed:	
Unknown?	Yes
3. When "Main" or "Service" is selected as the "Part of system involved in Incident" (from PART C, Question 2), provide the following:	
3a. Nominal diameter of pipe (in):	4
3b. Pipe specification (e.g., API 5L, ASTM D2513):	
Unknown?	Yes
3c. Pipe manufacturer:	
Unknown?	Yes
3d. Year of manufacture:	
Unknown?	Yes
4. Material involved in Incident:	Cast/Wrought Iron
- If Other, specify:	
4a. If Steel, Specify seam type:	
None/Unknown?	
4b. If Steel, Specify wall thickness *(inches)*:	
Unknown?	
4c. If Plastic, Specify type:	
- If Other, describe:	
4d. If Plastic, Specify Standard Dimension Ratio (SDR):	
Or wall thickness:	
Unknown?	
4e. If Polyethylene (PE) is selected as the type of plastic in Part C, Question 4.c:	
- Specify PE Pipe Material Designation Code (i.e. 2406, 3408, etc.)	
Unknown?	
5. Type of release involved :	Leak
- If Mechanical Puncture - Specify Approx size:	
Approx. size: in. (axial):	
in. (circumferential):	
- If Leak - Select Type:	Crack
- If Other, Describe:	

- If Rupture - Select Orientation:	
- If Other, Describe:	
Approx. size: (widest opening):	
(length circumferentially or axially):	
- If Other - Describe:	

PART D - ADDITIONAL CONSEQUENCE INFORMATION

1. Class Location of Incident :	Class 3 Location
2. Estimated Property Damage :	
2a. Estimated cost of public and non-Operator private property damage	$ 600,000
2b. Estimated cost of Operator's property damage & repairs	$ 6,500
2c. Estimated cost of Operator's emergency response	$ 10,500
2d. Estimated other costs	$ 15,000
- Describe:	Hotel rooms for residents that had to leave their homes
2e. Total estimated property damage (sum of above)	$ 632,000
Cost of Gas Released	
2f. Estimated cost of gas released	$ 0
3. Estimated number of customers out of service:	
3a. Commercial entities	0
3b. Industrial entities	0
3c. Residences	1

PART E - ADDITIONAL OPERATING INFORMATION

1. Estimated pressure at the point and time of the Incident (psig):	.50
2. Normal operating pressure at the point and time of the Incident (psig):	.50
3. Maximum Allowable Operating Pressure (MAOP) at the point and time of the Incident (psig):	.50
4. Describe the pressure on the system relating to the Incident:	Pressure did not exceed MAOP
5. Was a Supervisory Control and Data Acquisition (SCADA) based system in place on the pipeline or facility involved in the Incident?	No
- If Yes:	
5a. Was it operating at the time of the Incident?	
5b. Was it fully functional at the time of the Incident?	
5c. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume or pack calculations) assist with the detection of the Incident?	
5d. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the confirmation of the Incident?	
6. How was the Incident initially identified for the Operator?	Notification from Emergency Responder
6a. If "Controller", "Local Operating Personnel, including contractors", "Air Patrol", or "Ground Patrol by Operator or its contractor" is selected in Question 6, specify the following:	
- If Other, Specify:	
7. Was an investigation initiated into whether or not the controller(s) or control room issues were the cause of or a contributing factor to the Incident?	No, the Operator did not find that an investigation of the controller(s) actions or control room issues was necessary due to: (provide an explanation for why the Operator did not investigate)
- If No, the operator did not find that an investigation of the controller(s) actions or control room issues was necessary due to: *(provide an explanation for why the operator did not investigate)*	This is a low pressure cast iron main that was not monitored or controlled by control room staff
- If Yes, Specify investigation result(s) *(select all that apply)*:	
- Investigation reviewed work schedule rotations, continuous hours of service (while working for the Operator), and other factors associated with fatigue	
- Investigation did NOT review work schedule rotations, continuous hours of service (while working for the Operator), and other factors associated with fatigue	
- Provide an explanation for why not:	
- Investigation identified no control room issues	
- Investigation identified no controller issues	
- Investigation identified incorrect controller action or controller error	
- Investigation identified that fatigue may have affected the controller(s) involved or impacted the involved controller(s) response	
- Investigation identified incorrect procedures	
- Investigation identified incorrect control room equipment operation	

- Investigation identified maintenance activities that affected control room operations, procedures, and/or controller response	
- Investigation identified areas other than those above	
Describe:	

PART F - DRUG & ALCOHOL TESTING INFORMATION

1. As a result of this Incident, were any Operator employees tested under the post-accident drug and alcohol testing requirements of DOT's Drug & Alcohol Testing regulations?	No
- If Yes:	
1a. Specify how many were tested:	
1b. Specify how many failed:	
2. As a result of this Incident, were any Operator contractor employees tested under the post-accident drug and alcohol testing requirements of DOT's Drug & Alcohol Testing regulations?	No
- If Yes:	
2a. Specify how many were tested:	
2b. Specify how many failed:	

PART G - CAUSE INFORMATION

Select only one box from PART G in shaded column on left representing the Apparent Cause of the Incident, and answer the questions on the right. Describe secondary, contributing, or root causes of the Incident in the narrative (PART H).

Apparent Cause:	G2 - Natural Force Damage

G1 - Corrosion Failure – only one sub-cause can be picked from shaded left-hand column

Corrosion Failure Sub-Cause:	
- If External Corrosion:	
1. Results of visual examination:	
- If Other, Specify:	
2. Type of corrosion:	
- Galvanic	
- Atmospheric	
- Stray Current	
- Microbiological	
- Selective Seam	
- Other	
- If Other, Describe:	
3. The type(s) of corrosion selected in Question 2 is based on the following:	
- Field examination	
- Determined by metallurgical analysis	
- Other	
- If Other, Describe:	
4. Was the failed item buried under the ground?	
- If Yes:	
4a. Was failed item considered to be under cathodic protection at the time of the incident?	
- If Yes, Year protection started:	
4b. Was shielding, tenting, or disbonding of coating evident at the point of the incident?	
4c. Has one or more Cathodic Protection Survey been conducted at the point of the incident?	
If "Yes, CP Annual Survey" – Most recent year conducted:	
If "Yes, Close Interval Survey" – Most recent year conducted:	
If "Yes, Other CP Survey" – Most recent year conducted:	
- If No:	
4d. Was the failed item externally coated or painted?	
5. Was there observable damage to the coating or paint in the vicinity of the corrosion?	
6. Pipeline coating type, if steel pipe is involved:	
- If Other, Describe:	
- If Internal Corrosion:	
7. Results of visual examination:	
- If Other, Describe:	
8. Cause of corrosion *(select all that apply)*:	
- Corrosive Commodity	

- Water drop-out/Acid	
- Microbiological	
- Erosion	
- Other	
- If Other, Specify:	
9. The cause(s) of corrosion selected in Question 8 is based on the following: *(select all that apply)*:	
- Field examination	
- Determined by metallurgical analysis	
- Other	
- If Other, Describe:	
10. Location of corrosion *(select all that apply)*:	
- Low point in pipe	
- Elbow	
- Drop-out	
- Other	
- If Other, Describe:	
11. Was the gas/fluid treated with corrosion inhibitor or biocides?	
12. Were any liquids found in the distribution system where the Incident occurred?	
Complete the following if any Corrosion Failure sub-cause is selected AND the "Part of system involved in incident" (from PART C, Question 2) is Main, Service, or Service Riser.	
13. Date of the most recent Leak Survey conducted	
14. Has one or more pressure test been conducted since original construction at the point of the Incident?	
- If Yes:	
Most recent year tested:	
Test pressure:	
G2 – Natural Force Damage – only one sub-cause can be picked from shaded left-handed column	
Natural Force Damage – Sub-Cause:	Earth Movement, NOT due to Heavy Rains/Floods
- If Earth Movement, NOT due to Heavy Rains/Floods:	
1. Specify:	Other
- If Other, Specify:	Frost conditions to the depth of the main
- If Heavy Rains/Floods:	
2. Specify:	
- If Other, Specify:	
- If Lightning:	
3. Specify:	
- If Temperature:	
4. Specify:	
- If Other, Specify:	
- If High Winds:	
- Other Natural Force Damage:	
5. Describe:	
Complete the following if any Natural Force Damage sub-cause is selected.	
6. Were the natural forces causing the Incident generated in conjunction with an extreme weather event?	No
6.a If Yes, specify *(select all that apply)*:	
- Hurricane	
- Tropical Storm	
- Tornado	
- Other	
- If Other, Specify:	
G3 – Excavation Damage – only one sub-cause can be picked from shaded left-hand column	
Excavation Damage – Sub-Cause:	
- If Excavation Damage by Operator (First Party):	
- If Excavation Damage by Operator's Contractor (Second Party):	
- If Excavation Damage by Third Party:	
- If Previous Damage due to Excavation Activity:	

Complete the following ONLY IF the "Part of system involved in Incident" (from Part C, Question 2) is Main, Service, or Service Riser.	
1. Date of the most recent Leak Survey conducted	
2. Has one or more pressure test been conducted since original construction at the point of the Incident?	
- If Yes:	
Most recent year tested:	
Test pressure:	
Complete the following if Excavation Damage by Third Party is selected.	
3. Did the operator get prior notification of the excavation activity?	
3a. If Yes, Notification received from: *(select all that apply)*:	
- One-Call System	
- Excavator	
- Contractor	
- Landowner	
Complete the following mandatory CGA-DIRT Program questions if any Excavation Damage sub-cause is selected.	
4. Do you want PHMSA to upload the following information to CGA-DIRT (www.cga-dirt.com)?	
5. Right-of-Way where event occurred *(select all that apply)*:	
- Public	
- If Public, Specify:	
- Private	
- If Private, Specify:	
- Pipeline Property/Easement	
- Power/Transmission Line	
- Railroad	
- Dedicated Public Utility Easement	
- Federal Land	
- Data not collected	
- Unknown/Other	
6. Type of excavator :	
7. Type of excavation equipment :	
8. Type of work performed :	
9. Was the One-Call Center notified?	
9a. If Yes, specify ticket number:	
9b. If this is a State where more than a single One-Call Center exists, list the name of the One-Call Center notified:	
10. Type of Locator:	
11. Were facility locate marks visible in the area of excavation?	
12. Were facilities marked correctly?	
13. Did the damage cause an interruption in service?	
13a. If Yes, specify duration of the interruption:	
14. Description of the CGA-DIRT Root Cause *(select only the one predominant first level CGA-DIRT Root Cause and then, where available as a choice, the one predominant second level CGA-DIRT Root Cause as well)*:	
- Root Cause Description:	
- If One-Call Notification Practices Not Sufficient, specify:	
- If Locating Practices Not Sufficient, specify:	
- If Excavation Practices Not Sufficient, specify:	
- If Other/None of the Above (explain), specify:	
G4 - Other Outside Force Damage - only one sub-cause can be selected from the shaded left-hand column	
Other Outside Force Damage – Sub-Cause:	
- If Nearby Industrial, Man-made, or Other Fire/Explosion as Primary Cause of Incident:	
- If Damage by Car, Truck, or Other Motorized Vehicle/Equipment NOT Engaged in Excavation:	
1. Vehicle/Equipment operated by:	
- If Damage by Boats, Barges, Drilling Rigs, or Other Maritime Equipment or Vessels Set Adrift or Which Have Otherwise Lost Their Mooring:	
2. Select one or more of the following IF an extreme weather event was a factor:	
- Hurricane	
- Tropical Storm	
- Tornado	
- Heavy Rains/Flood	

- Other	
- If Other, Specify:	
- If Routine or Normal Fishing or Other Maritime Activity NOT Engaged in Excavation:	
- If Electrical Arcing from Other Equipment or Facility:	
- If Previous Mechanical Damage NOT Related to Excavation:	
Complete the following ONLY IF the "Part of system involved in Incident" (from Part C, Question 2) is Main, Service, or Service Riser.	
3. Date of the most recent Leak Survey conducted:	
4. Has one or more pressure test been conducted since original construction at the point of the Incident?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
- If Intentional Damage:	
5. Specify:	
-If Other, Specify:	
- If Other Outside Force Damage:	
6. Describe:	
G5 - Pipe, Weld, or Joint Failure - only one **sub-cause** can be selected from the shaded left-hand column	
Pipe, Weld or Joint Failure – Sub-Cause:	
- If Body of Pipe:	
1. Specify:	
- If Other, Describe:	
- If Butt Weld:	
2. Specify:	
- If Other, Describe:	
- If Fillet Weld:	
3. Specify:	
- If Other, Describe:	
- If Pipe Seam:	
4. Specify:	
- If Other, Describe:	
- If Threaded Metallic Pipe:	
- If Mechanical Fitting:	
5. Specify the mechanical fitting involved:	
- If Other, Describe:	
6. Specify the type of mechanical fitting:	
- If Other, Describe:	
7. Manufacturer:	
8. Year manufactured:	
9. Year Installed:	
10. Other attributes:	
11. Specify the two materials being joined:	
11a. First material being jointed:	
- Steel	
- Cast/Wrought Iron	
- Ductile Iron	
- Copper	
- Plastic	
- Unknown	
- Other	
- If Other, Specify:	
11b. If Plastic, specify:	
- If Other Plastic, specify:	
11c. Second material being joined:	
- Steel	
- Cast/Wrought Iron	
- Ductile Iron	
- Copper	
- Plastic	

- Unknown	
- Other	
- If Other, Specify:	
11d. If Plastic, specify:	
- If Other Plastic, Specify:	
12. If used on plastic pipe, did the fitting – as designed by the manufacturer – include restraint?	
12a. If Yes, specify:	
- If Compression Fitting:	
13. Fitting type:	
14. Manufacturer:	
15. Year manufactured:	
16. Year installed:	
17. Other attributes:	
18. Specify the two materials being joined:	
18a. First material being joined:	
- Steel	
- Cast/Wrought Iron	
- Ductile Iron	
- Copper	
- Plastic	
- Unknown	
- Other	
- If Other, specify:	
18b. If Plastic, specify:	
- If Other Plastic, specify:	
18c. Second material being joined:	
- Steel	
- Cast/Wrought Iron	
- Ductile Iron	
- Copper	
- Plastic	
- Unknown	
- Other	
If Other, specify:	
18d. If Plastic, specify:	
- Other Plastic, specify:	
- If Fusion Joint:	
19. Specify:	
- If Other, Specify:	
20. Year installed:	
21. Other attributes:	
22. Specify the two materials being joined:	
22a. First material being joined:	
- If Other, Specify:	
22b. Second material being joined:	
- If Other, Specify:	
- If Other Pipe, Weld, or Joint Failure:	
23. Describe:	
Complete the following if any Pipe, Weld, or Joint Failure sub-cause is selected.	
24. Additional Factors (*select all that apply*):	
- Dent	
- Gouge	
- Pipe Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	
- Wrinkle	
- Misalignment	
- Burnt Steel	
- Other	
25. Was the Incident a result of:	
- Construction defect	
Specify:	
- Material defect	

Specify:	
- If Other, Specify:	
- Design defect	
- Previous damage	
26. Has one or more pressure test been conducted since original construction at the point of the Incident?	
- If Yes:	
Most recent year tested:	
Test pressure:	

G6 - Equipment Failure - only one **sub-cause** can be selected from the shaded left-hand column

Equipment Failure – Sub-Cause:	
- If Malfunction of Control/Relief Equipment:	
1. Specify:	
- Control Valve	
- Instrumentation	
- SCADA	
- Communications	
- Block Valve	
- Check Valve	
- Relief Valve	
- Power Failure	
- Stopple/Control Fitting	
- Pressure Regulator	
- Other	
- If Other, Specify:	
- If Threaded Connection Failure:	
2. Specify:	
- If Other, Specify:	
- If Non-threaded Connection Failure:	
3. Specify:	
- If Other, Specify:	
- If Valve:	
4. Specify:	
- If Other, Specify:	
4a. Valve type:	
4b. Manufactured by:	
4c. Year manufactured:	
- If Other Equipment Failure:	
5. Describe:	

G7 - Incorrect Operation - only one **sub-cause** can be selected from the shaded left-hand column

Incorrect Operation Sub-Cause:	
- If Damage by Operator or Operator's Contractor NOT Related to Excavation and NOT due to Motorized Vehicle/Equipment Damage:	
- If Valve Left or Placed in Wrong Position, but NOT Resulting in an Overpressure:	
- If Pipeline or Equipment Overpressured:	
- If Equipment Not Installed Properly:	
- If Wrong Equipment Specified or Installed:	
- If "Other Incorrect Operation:	
1. Describe:	
Complete the following if any Incorrect Operation sub-cause is selected.	
2. Was this Incident related to: (select all that apply)	
- Inadequate procedure	
- No procedure established	
- Failure to follow procedure	
- Other	
- If Other, Describe:	
3. What category type was the activity that caused the Incident:	
4. Was the task(s) that led to the Incident identified as a covered task in your	

Operator Qualification Program?	
4a. If Yes, were the individuals performing the task(s) qualified for the task(s)?	

G8 - Other Incident Cause - only one sub-cause can be selected from the shaded left-hand column

Other Incident Cause – Sub-Cause:	
- If Miscellaneous:	
1. Describe:	
- If Unknown:	
2. Specify:	

PART H - NARRATIVE DESCRIPTION OF THE INCIDENT

Explosion occurred at 214 Lunenburg St in Fitchburg Mass on February 5, 2013. Unitil first responders responded to the scene and began leak investigation and found a cracked 4" cast iron main that they repaired and the cause was determined to be from frost conditions down to the top of the main.

File Full Name Note: The users have to sign in to view the attachment if there is no current user session.

PART I - PREPARER AND AUTHORIZED SIGNATURE

Preparer's Name	Daniel Golden
Preparer's Title	Manager Gas Distribution
Preparer's Telephone Number	978-353-3245
Preparer's E-mail Address	golden@unitil.com
Preparer's Facsimile Number	978-353-3345
Authorized Signature	
Authorize Signature's Name	Daniel Golden
Authorized Signature's Title	Manager Gas Distribution
Authorized Signature Telephone Number	978-353-3245
Authorized Signature's Email Address	golden@unitil.com
Date	04/04/2013

EXHIBIT 2

Incident Timeline

214 Lunenburg St Incident Timeline

Initial Notification		
2.5.2013	17:30	214 Lunenburg St

- Portsmouth Gas Control was notified by Fitchburg Fire Department that there was a possible explosion at 214 Lunenburg St and they need First Responders.

Unitil First Responder Notified from Portsmouth Gas Control	
2/5/2013 – 17:31	Mark Corliss

Mark Corliss – Unitil First Responder was notified by Gas Control

Unitil First Responder Arrives at Scene	
2/5/2013 – 17:32	Mark Corliss

- Mark Corliss Arrives on scene and checks in with FFD Deputy Chief
- Called Gas Control requesting additional resources
  - Gas Street Dept.
  - Electric Line Crew
  - Supervisors
  - Digsafe
- Shut off and locked the gas meters at 5 Linwood St
- Called Mark Dimeco and Dan Golden to respond
- Began checking surrounding buildings for gas leaks

Unitil First Responder Arrives at Scene	
2/5/2013 – 17:40	Bret Yuknavich – First Responder

- Bret Yuknavich arrives on scene and begins area checks and building checks

Unitil Gas Street Crew Arrives	
2/5/2013 – 17:40	Robert Halstead – Utility Worker Lead and Crew

- Bob Halstead and crew (Kevin Leblanc, and Normand Cormier arrived)
- Began assisting with bar holing, set up aerator, cleared area where strongest readings were located
- Excavated hole over 4 inch cast iron main

Emergency Notification to Staff	
2/5/2013 – 17:43	Portsmouth Gas Control

- Portsmouth Gas Control sends out G-Alert at 17:43 to ALL Staff

Additional Resources Called In	
2/5/2013 – 17:47	Portsmouth Gas Control

- Portsmouth Gas Control Called In Additional Service Technicians per order of Dan Golden
-

Department of Public Utilities Notified by Unitil Gas Control	
2/5/2013 – 17:56	Unitil Gas Control – Initial DPU notification

- Unitil Gas Control Notified Glen LaChance from the Mass DPU of a possible gas explosion at 214 Lunenburg St – Fitchburg.

Supervisors Arive	
2/5/2013 – 18:00 – 18:05	Dan Golden, Mark Dimeco, Ken Labombard

214 Lunenburg St Incident Timeline

- Mark Dimeco arrived and began supervising the make safe actions of the street crew (Halstead)
- Dan Golden arrived, checked in with Deputy Chief Curran and asked Ken Labombard to take charge of leak survey of main and services in surrounding area from John Fitch Highway to Boutelle St.

Area Made Safe	
2/5/2013 – 18:20-18:30	Street Crew

- 4 inch diameter cast iron gas main was bagged off on Linwood St

Repairs Made	
2/5/2013 – 19:00 ~	Street Crew

- Circumferential crack was repaired with a full circle Mueller clamp on 4 inch cast iron main on Linwood St

Strategic Response Committee Meeting	
2/5/2013 – 19:15	Tom Meissner, Chris LeBlanc

- Unitil Strategic Response Committee held a meeting to discuss Unitil's Response to the incident.

Leak Surveys Completed of Area	
2/5/2013 – 22:30	First Responders

- Leak Survey of all mains and services between John Fitch Highway and Boutelle St were leak surveyed

Service to 214 Lunenburg St – Pressure Tested	
2/5/2013 –23:10 – 23:25	Street Crew

- 1-1/2 LP bare steel service going to 214 Lunenburg St was pressure tested at 10 PSIG for 15 minutes with no pressure drop per MA DPU Investigators Glen Lachance and Rob McCabe

MA DPU and Unitil Supervisors Clear the Scene	
2/5/2013 –23:40 - 23:50	Supervisors

214 Lunenburg St Incident Timeline

- Dan Golden had a meeting with the MA DPU and discussed the plan for the next day to continue the investigation.
- Plan to meet the MA DPU at 09:00 at the office at 285 John Fitch Highway, Fitchburg

4 inch cast iron main cut and capped	
2/6/2013 - 01:00	Street Crew

- 4 inch diameter cast iron gas main was cut and capped on Linwood St

4 inch cast iron main on Linwood St was replaced	
2/6/2013 - 10:00 - 15:30	Street Crew

- 4 inch diameter cast iron gas main replaced with 2" LP HDPE from the main on Lunenburg St to end of line on 5 Linwood St. Old cast iron was inserted with new plastic.

EXHIBIT 3

NEFCO Fire Investigations Photographs (clamp installed to repair crack on pipeline):

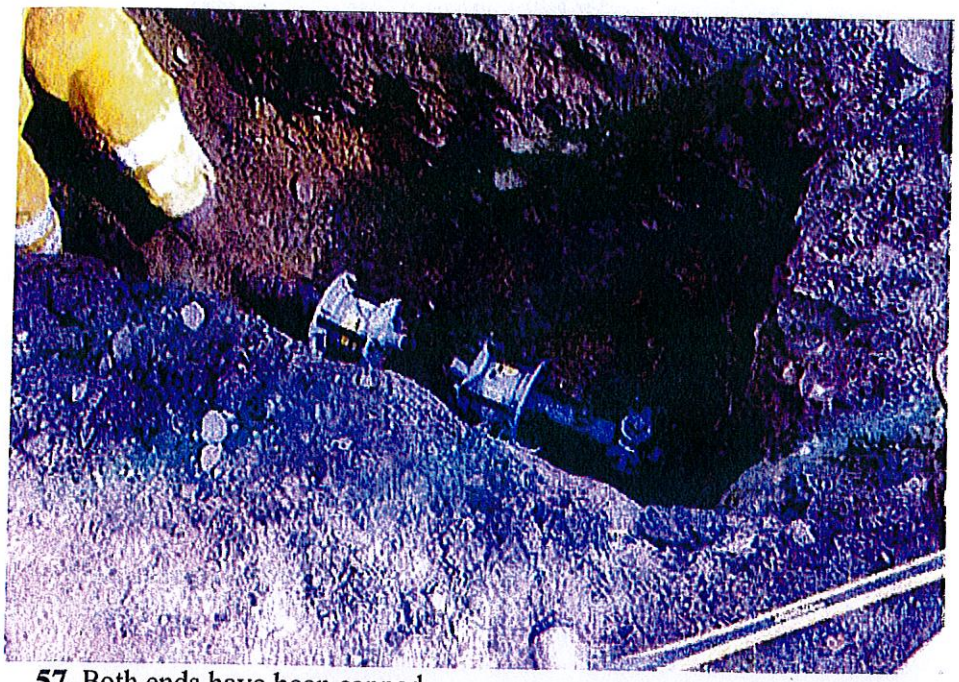
(3) The product leak was located, excavated and sleeved
(4) Closer view of sleeve patch and ground wire
(57) Both ends have been capped
(58) Ends capped

NEFCO FIRE INVESTIGATIONS PHOTOGRAPHS

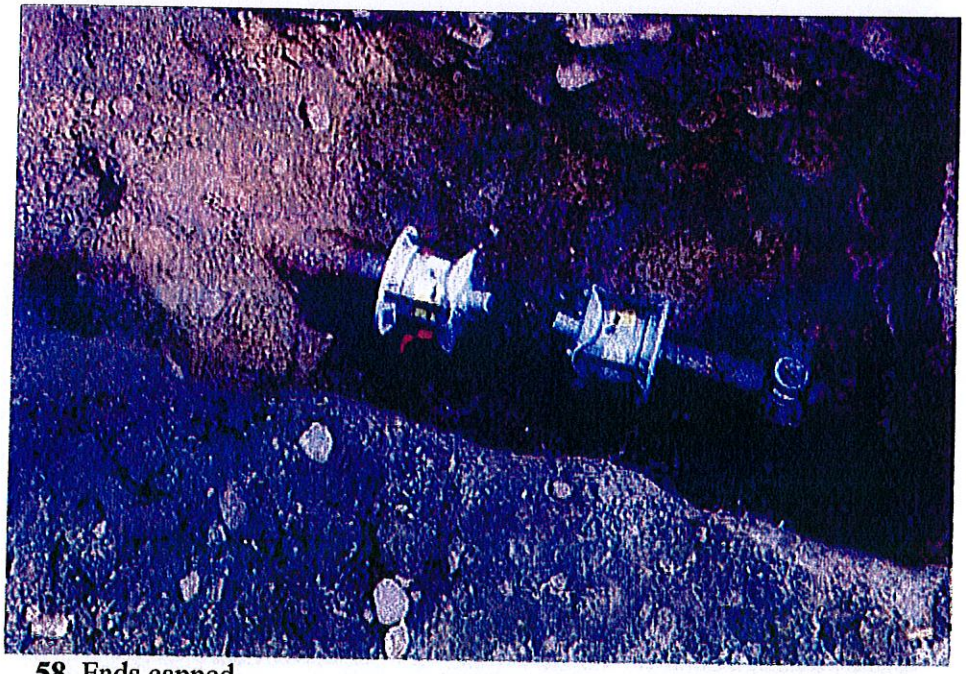
3. The product leak was located, excavated and sleeved.

4. Closer view of sleeve patch and ground wire.

NEFCO FIRE INVESTIGATIONS
PHOTOGRAPHS



57. Both ends have been capped.



58. Ends capped.

EXHIBIT 4

NEFCO Fire Investigations Photographs:

(21) Rubble from destroyed addition to auto parts Store, 214 Lunenburg Street
(22) Auto parts store in daylight, 214 Lunenburg Street
(35) Outside front door to store – door frames were blown out and brick veneer had collapsed, 214 Lunenburg Street
(36) Front side, 214 Lunenburg Street
(35) View of the apartment building northwest of the scene, 5 Linwood Street
(36) View of the front doors with the city placards, 5 Linwood Street

NEFCO FIRE INVESTIGATIONS
PHOTOGRAPHS

21. Rubble from destroyed addition to auto parts store. (214 Lunenburg Street)

22. Auto parts store in daylight (214 Lunenburg Street)

NEFCO FIRE INVESTIGATIONS
PHOTOGRAPHS

35. Outside front door to store - door frames were blown out and brick veneer had collapsed. (214 Lunenburg Street)

36. Front side. (214 Lunenburg Street)

NEFCO FIRE INVESTIGATIONS
PHOTOGRAPHS

35. View of the apartment building northwest of the scene (5 Linwood Street)

36. View of the front doors with the city placards (5 Linwood Street)

EXHIBIT 5

Copy of city of Fitchburg property
Assessment Record for 214 Lunenburg Street, Front

Card 1 of 1

Location 214 LUNENBURG ST	Property Account Number 0	Parcel ID 34 86 0

Old Parcel ID -313.972-5.7137345679012

Current Property Mailing Address

Owner TATE, JOHN L. + NANCY J. TRS.	City FITCHBURG
RM TRUST	State MA
Address 214 LUNENBURG STREET	Zip 01420
	Zoning C&A

Current Property Sales Information

Sale Date 12/2/1997	Legal Reference 3099-181
Sale Price 200,000	Grantor(Seller) HOPFMANN, RICHARD A. SR.

Current Property Assessment

	Card 1 Value
Year 2013	Building Value 92,800
	Xtra Features Value 6,300
Land Area 0.607 acres	Land Value 142,200
	Total Value 241,300

Narrative Description

This property contains 0.607 acres of land mainly classified as AUTOREP with a(n) RTL STORE style building, built about 1910 , having BRICK exterior and MEMBRANE roof cover, with 1 unit(s), 0 total room(s), 0 total bedroom(s), 0 total bath(s), 2 total half bath(s), 0 total 3/4 bath(s).

Legal Description

Property Images

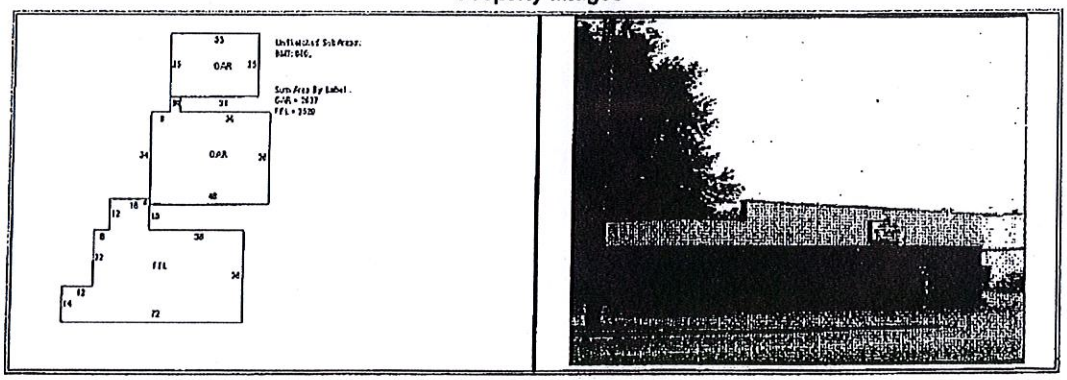


EXHIBIT 6

Photograph of:

(a) the northwest corner of the foundation of 214 Lunenburg Street, Front

(b) foundation concrete blocks

(a) The northwest corner of the foundation of 214 Lunenburg Street, Front

(b) Foundation concrete blocks

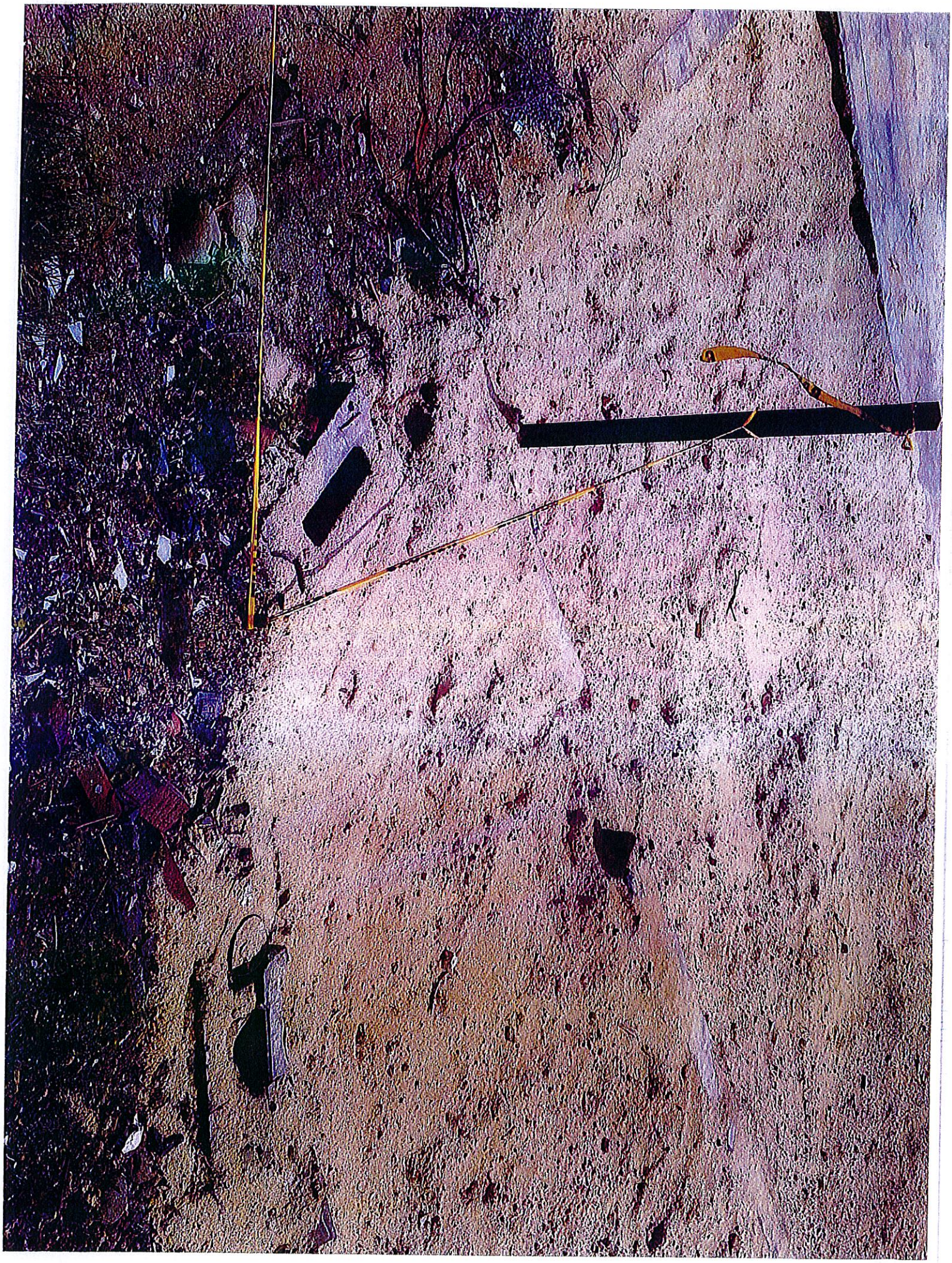


EXHIBIT 7

City of Fitchburg Fire Department Report

A FDID: 27097 ☆ | State: MA ☆ | Incident Date (MM DD YYYY): 02 05 2013 ☆ | Station: HQ | Incident Number: 428 ☆ | Exposure: 0 ☆ | ☐ Delete ☐ Change ☐ No Activity | NFIRS-1 BASIC OMB 1660-0069 Expires 06/30/2009 *Paperwork Burden Notice on Back

B Location Type ☆ | ☐ Check this box to indicate that the address for this incident is provided on the Wildland Fire Module in Section B, "Alternative Location Specification. Use only for Wildland fires." | Census Tract: 7101-

- ☒ Street address
- ☐ Intersection
- ☐ In front of
- ☐ Rear of
- ☐ Adjacent to
- ☐ Directions
- ☐ US National Grid

Number/Milepost: 214 | Prefix: | Street or Highway: LUNENBURG | Street Type: ST | Suffix:
Apt./Suite/Room: | City: Fitchburg | State: MA | Zip Code: 01420-
Cross Street, Directions or National Grid, as applicable:

C Incident Type ☆: 111 Building fire

D Aid Given or Received ☆ ☒ None

1 ☐ Mutual aid received
2 ☐ Auto. aid received
3 ☐ Mutual aid given
4 ☐ Auto. aid given
5 ☐ Other aid given

Their FDID | Their State | Their Incident Number

E1 Dates & Times — Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hour	Min
Alarm ☆ (ALARM always required)	02	05	2013	17	21
☒ Arrival ☆ (ARRIVAL required, unless canceled or did not arrive)	02	05	2013	17	26
☐ Controlled (CONTROLLED optional, except for wildland fires)					
☒ Last Unit Cleared (LAST UNIT CLEARED, required except for wildland fires)	02	05	2013	22	29

E2 Shifts & Alarms — Local Option: Shift or Platoon: 1 | Alarms: 1 | District: E1

E3 Special Studies — Local Option: Special Study ID# | Special Study Value

F Actions Taken ☆

11 Extinguishment by fire service personnel — Primary Action Taken (1)
12 Salvage & overhaul — Additional Action Taken (2)
65 Secure property — Additional Action Taken (3)

G1 Resources ☆

☐ Check this box and skip this block if an Apparatus or Personnel Module is used.

	Apparatus	Personnel
Suppression	5	16
EMS	1	2
Other	2	2

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses and Values

LOSSES: Required for all fires if known. Optional for non fires.		None
Property	$ 95,000	☐
Contents	$ 50,000	☐
PRE-INCIDENT VALUE: Optional		
Property	$ 95,000	☐
Contents	$	☐

Completed Modules

- ☒ Fire-2
- ☒ Structure Fire-3
- ☐ Civilian Fire Cas.-4
- ☐ Fire Service Cas.-5
- ☐ EMS-6
- ☐ HazMat-7
- ☐ Wildland Fire-8
- ☐ Apparatus-9
- ☐ Personnel-10
- ☐ Arson-11

H1 ☆ Casualties ☒ None

	Deaths	Injuries
Fire Service		
Civilian		

H2 Detector — Required for confined fires.

1 ☐ Detector alerted occupants
2 ☒ Detector did not alert them
U ☐ Unknown

H3 Hazardous Materials Release ☐ None

1 ☐ Natural gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable storage
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling <55 gallons
0 ☐ Other: Special HazMat actions required or spill > 55 gal (Please complete the HazMat form)

I Mixed Use Property ☐ Not mixed

- 10 ☐ Assembly use
- 20 ☐ Education use
- 33 ☐ Medical use
- 40 ☐ Residential use
- 51 ☐ Row of stores
- 53 ☐ Enclosed mall
- 58 ☐ Business & residential
- 59 ☐ Office use
- 60 ☐ Industrial use
- 63 ☐ Military use
- 65 ☐ Farm use
- 00 ☒ Other mixed use

J Property Use ☆ ☐ None

Structures

- 131 ☐ Church, place of worship
- 161 ☐ Restaurant or cafeteria
- 162 ☐ Bar/tavern or nightclub
- 213 ☐ Elementary school, kindergarten
- 215 ☐ High school, junior high
- 241 ☐ College, adult education
- 311 ☐ Nursing Home
- 331 ☐ Hospital
- 341 ☐ Clinic, clinic-type infirmary
- 342 ☐ Doctor/dentist office
- 361 ☐ Prison or jail, not juvenile
- 419 ☐ 1- or 2-family dwelling
- 429 ☐ Multifamily dwelling
- 439 ☐ Rooming/boarding house
- 449 ☐ Commercial hotel or motel
- 459 ☐ Residential, board and care
- 464 ☐ Dormitory/barracks
- 519 ☐ Food and beverage sales
- 539 ☐ Household goods, sales, repairs
- 571 ☐ Gas or service station
- 579 ☐ Motor vehicle/boat sales/repairs
- 599 ☐ Business office
- 615 ☐ Electric-generating plant
- 629 ☐ Laboratory/science laboratory
- 700 ☐ Manufacturing plant
- 819 ☐ Livestock/poultry storage (barn)
- 882 ☐ Non-residential parking garage
- 891 ☐ Warehouse

Outside

- 124 ☐ Playground or park
- 655 ☐ Crops or orchard
- 669 ☐ Forest (timberland)
- 807 ☐ Outdoor storage area
- 819 ☐ Dump or sanitary landfill
- 931 ☐ Open land or field
- 936 ☐ Vacant lot
- 938 ☐ Graded/cared for plot of land
- 946 ☐ Lake, river, stream
- 951 ☐ Railroad right-of-way
- 960 ☐ Other street
- 961 ☐ Highway/divided highway
- 962 ☐ Residential street/driveway
- 981 ☐ Construction site
- 984 ☐ Industrial plant yard

Look up and enter a Property Use code and description only if you have NOT checked a Property Use box:

Property Use: 500 — Mercantile, business, other

NFIRS-1 Revision 01/01/07

A

FDID	State	Incident Date (MM DD YYYY)	Station	Incident Number	Exposure
27097	MA	02 05 2013	HQ	428	0

☐ Delete ☐ Change ☐ No Activity

NFIRS-1 BASIC
OMB 1660-0069
Expires 06/30/2009

K1 Person/Entity Involved Local Option

Business name (if applicable) | Area Code | Phone Number

☐ Check this box if same address as incident Location (Section B). Then skip the three duplicate address lines.

Mr., Ms., Mrs. | First Name | MI | Last Name | Suffix

Number | Prefix | Street or Highway | Street Type | Suffix

Post Office Box | Apt./Suite/Room | City

State | Zip Code

☐ More people involved? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary.

K2 Owner Local Option ☐ Same as person involved? Then check this box and skip the rest of this section.

Business name (if applicable): VICTORY AUTO SUPPLY | Area Code: 978 | Phone Number: 597-8087

☐ Check this box if same address as incident Location (Section B). Then skip the three duplicate address lines.

Mr., Ms., Mrs.: | First Name: JOHN | MI: | Last Name: TATE | Suffix:

Number: 52 | Prefix: | Street or Highway: MAPLEWOOD | Street Type: DR | Suffix:

Post Office Box: | Apt./Suite/Room: | City: TOWNSEND

State: MA | Zip Code: 01469 –

L Remarks: Local Option

Box alarm and then several calls about a explosion at 214 Lunenburg St. Heard police on scene asking for help and several ambulances. Upon arrival front windows were blown out and the B-side of the building had collapsed. Was informed by Detective Romano of the FPD that all occupants of the building were accounted for. E-4 crews stretched a 13/4 line to the B-side to extinguish small amount of fire, a second line was stretched for back up, E-2 was asked to stretch a line down the C-side and to the rear. TL-3 and E-1 were asked to start metering buildings in surrounding area. Until was on scene within a couple of minutes and started excavating in the street.Two people in the store at time of explosion, Mr John Tate, (owner) and a Mr John Macintire of Westminster, both were examined on scene by Med Star. Agencies on scene include Unitil, Robert Mccabe (Dept of Public Utilities), Red Cross (10 displaced residents 2 from 5 Linwood, and 8 from 204 Lunenburg St, Building Dept (Duffy Lanciani and Bentley), Fire Prevention State Marshalls Office.

ITEMS WITHA ☆ MUST ALWAYS BE COMPLETED!

☒ More remarks? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary.

KAR

M Authorization

Check box if same as Officer in charge.	Officer in charge ID	Signature	Position or rank	Assignment	Month	Day	Year
☐	JCURRAN	CURRAN, JOHN	Deputy Chief	FF	02	05	2013
	Member making report ID	Signature	Position or rank	Assignment	Month	Day	Year

NARRATIVE FOR LIEUTENANT JR., PHILIP D JORDAN JR.

Ref: 13-428-IN

Entered: 02/05/2013 @ 2003 Entry ID: PJORDAN
Modified: 02/05/2013 @ 2003 Modified ID: PJORDAN

Engine 1 was covering Oak Hill Station. We were the last Fitchburg Apparatus to arrive. E-1 was parked and we continued in for manpower to assist E-2 connecting into hydrant and running lines into the rear C/D corner of the explosion building.
FF Maynard assisted E-4 crews (A-side). FF Morin and myself assisted advancing 1 3/4 line with Engine 2 crew. I metered the building with the 5 gas meter and found slight readings due to smoke but no alarms. We entered the rear workship with E-2. No fire conditions. We found The electrical main in the garage with multiple meters and shut the power off to the building. The furnace emergency shut off was also shut off as the oil tanks in the furnace room appeared to have shifted from the blast.
C-1 sent E1 and TL3 on a meter check to all surrounding building. TL3 started on the B-side. We checked (C-D sides) Performance Transmission, NAPA, Conquest,Dip-In donuts. We found nothing by meter regarding natural gas.
Assisted in breaking down Engine 4 handlines and returned completely in service to HQ.
Used Thermal Imager and Gas Meter.
FF Maynard FF Morin Lt.P.Jordan

NARRATIVE FOR LIEUTENANT DANTE W SUAREZ

Ref: 13-428-IN

Entered: 02/05/2013 @ 2307 Entry ID: DSUAREZ
Modified: 02/05/2013 @ 2329 Modified ID: BMURCH

10E4 WAS DISPATCHED ON A FIRST ALARM RESPONSE TO 214 LUNENBURG STREET ON REPORTS OF A BUILDING EXPLOSION. UPON ARRIVAL, THE B-SIDE OF THE ONE STORY BUILDING WAS LEVELED AND FIRE WAS BURNING FROM THE RUBBLE. PVT TORRES AND PVT ROY TIED INTO THE NEAREST HYDRANT WHILE LT. SUAREZ AND PVT ROBLES STRETCHED 2 13/4 LINES TO BEGAN EXTINGUISHING THE FIRE. ONCE THE FIRE WAS KNOCKED DOWN WITH THE HELP OF THE RESCUE-3 AND TL-3 CREWS, THE 10E4 CREW WAS ORDERED INTO THE BUILDING TO SEARCH FOR POSSIBLE VICTIMS AND/OR FIRE EXTENSION. NO VICTIMS OR FIRE WERE FOUND INSIDE THE BUILDING. THE 10E4 CREW REMAINED ON SCENE OVERHAULING HOT SPOTS WITHIN THE RUBBLE UNTIL REALEASED BACK TO HQ TO REPACK THE ENGINE AND RETURN TO FULL SERVICE.

LT. D. SUAREZ
PVT. M. TORRES
PVT. F. ROBLES
PVT. A. ROY

NARRATIVE FOR CAPTAIN BRIAN D MURCHIE

Ref: 13-428-IN

Entered: 02/05/2013 @ 2325 Entry ID: BMURCH
Modified: 02/05/2013 @ 2325 Modified ID: BMURCH

TOWER LADDER 3 ARRIVED ON SCENE OF AN EXPLOSION VICTORY AUTO PARTS. ORDERED BY D.C. TO CHECK ADJACENT BUILDINGS FOR OCCUPANTS AND TO METER BUILDINGS STARTING WITH THE RESIDENCE TO THE REAR ON LINWOOD. CHECKED THAT BUILDING AND KEOSHA SHOE AND ALDRICH FOUND NO TRACES OF GAS.
MURCHIE
PIERMARINI
HAVERTY
PARRILO

NARRATIVE FOR DEPUTY CHIEF JOHN C CURRAN

Ref: 13-428-IN

Entered: 02/06/2013 @ 0605 Entry ID: JCURRAN
Modified: 02/06/2013 @ 0605 Modified ID: JCURRAN

Three building were tagged by the Building Department 204&214 Lunenburg St as well as 5 Linwood St. Residence from Linwood St. G. Leblanc and a Ms Brouvior and eight residence from 204 Lunenburg St Mian Din Chen and family were assisted by the Red Cross. E-6 and Special Ops called to scene for overhaul.

NARRATIVE FOR LIEUTENANT GREGORY J MAY

Ref: 13-428-IN

Entered: 03/13/2013 @ 2109 Entry ID: GMAY
Modified: 03/13/2013 @ 2109 Modified ID: GMAY

ENG 2 RESPONDED ON BUILDING EXPLOSION. UPON ARRIVAL FROM ORDERS OF 10 C-1, ENG 2 CREW STRETCHED 1 3/4 LINE TO D SIDE OF BUILDING. CHECKED BUILDING TO REAR WITH PID AND MONITERED FOR ANY CO PROBLEMS. ENG 2 DRIVER CONNECTED TO HYDRANT FOR WATER IF NEEDED. MONITERED D SIDE OF BUILDING FOR ANY HAZARDS. RELEASED TO CENTRAL AND ASSISTED CREWS WITH PUTTING TRUCKS BACK IN SERVICE.

MAY
RAMOS
SUAREZ

NFIRS-2 FIRE
OMB 1660-0069
Expires 06/30/2009
Paperwork Burden Notice on Back

A

FDID	State	Incident Date (MM DD YYYY)	Station	Incident Number	Exposure	
27097	MA	02 05 2013	HQ	428	0	☐ Delete ☐ Change

B Property Details

B1 0 ☒ Not Residential
Estimated number of residential living units in building of origin *whether or not all units became involved*

B2 0 ☒ Buildings not involved
Number of buildings involved

B3 ☒ None ☐ Less than one acre
Acres burned (outside fires)

C On-Site Materials or Products ☒ None
Complete if there were any significant amounts of commercial, industrial, energy or agricultural products or materials on the property *whether or not they became involved.*

Enter up to three codes. Check one box for each code entered.

	On-site material	On-Site Materials Storage Use
(1)		1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service U ☐ Undetermined
(2)		1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service U ☐ Undetermined
(3)		1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service U ☐ Undetermined

D Ignition

D1 21 Office
Area of fire origin

D2 00 Heat source: other
Heat source

D3 10 Structural component or finish, other
Item first ignited — 1 ☐ Check box if fire spread was confined to object of origin

D4 12 LP gas
Type of material first ignited — Required only if item first ignited code is 00 or <70

E1 Cause of Ignition
☐ Check box if this is an exposure report. → Skip to Section G

1 ☐ Intentional
2 ☒ Unintentional
3 ☐ Failure of equipment or heat source
4 ☐ Act of nature
5 ☐ Cause under investigation
U ☐ Cause undetermined after investigation

E2 Factors Contributing To Ignition ☒ None

Factor contributing to ignition (1)

Factor contributing to ignition (2)

E3 Human Factors Contributing to Ignition
Check all applicable boxes ☒ None

1 ☐ Asleep
2 ☐ Possibly impaired by alcohol or drugs
3 ☐ Unattended person
4 ☐ Possibly mentally disabled
5 ☐ Physically disabled
6 ☐ Multiple persons involved
7 ☐ Age was a factor

Estimated age of person involved

1 ☐ Male 2 ☐ Female

F1 Equipment Involved In Ignition
☒ None → If equipment was not involved, skip to Section G

Equipment Involved
Brand
Model
Serial #
Year

F2 Equipment Power

Equipment Power Source

F3 Equipment Portability

1 ☐ Portable
2 ☐ Stationary

Portable equipment normally can be moved by one or two persons, is designed to be used in multiple locations, and requires no tools to install.

G Fire Suppression Factors
Enter up to three codes. ☒ None

Fire suppression factor (1)

Fire suppression factor (2)

Fire suppression factor (3)

H1 Mobile Property Involved ☒ None

1 ☐ Not involved in ignition, but burned
2 ☐ Involved in ignition, but did not burn
3 ☐ Involved in ignition and burned

H2 Mobile Property Type & Make

Mobile property type

Mobile property make

Mobile property model — Year

License Plate Number — State — VIN

Structure fire? Please be sure to complete the Structure Fire form (NFIRS-3)

Local Use

☐ Pre-Fire Plan Available

Some of the information presented in this report may be based upon reports from other agencies:

☐ Arson report attached
☐ Police report attached
☐ Coroner report attached
☐ Other reports attached

NFIRS-2 Revision 01/01/07

A FDID: 27097 | State: MA | Incident Date (MM DD YYYY): 02 05 2013 | Station: HQ | Incident Number: 428 | Exposure: 0 | ☐ Delete ☐ Change

NFIRS-3 STRUCTURE FIRE
OMB 1660-0069
Expires 06/30/2009
Paperwork Burden Notice on Back

I1 Structure Type ☆

If fire was in an enclosed building or a portable/mobile structure, complete the rest of this form

1 ☒ Enclosed building
2 ☐ Portable/mobile structure
3 ☐ Open structure
4 ☐ Air-supported structure
5 ☐ Tent
6 ☐ Open platform (e.g. piers)
7 ☐ Underground structure (work areas)
8 ☐ Connective structure (e.g. fences)
0 ☐ Other type of structure

I2 Building Status ☆

1 ☐ Under construction
2 ☒ Occupied & operating
3 ☐ Idle, not routinely used
4 ☐ Under major renovation
5 ☐ Vacant and secured
6 ☐ Vacant and unsecured
7 ☐ Being demolished
0 ☐ Other
U ☐ Undetermined

I3 Building Height ☆

Count the roof as part of the highest story

1 — Total number of stories at or above grade

— Total number of stories below grade

I4 Main Floor Size ☆

— Total square feet

OR

46 BY 72
Length in feet BY Width in feet

J1 Fire Origin ☆

1 — Story of fire origin

☐ Below grade

J2 Fire Spread ☆

If fire spread was confined to object of origin do not check a box (Ref. Block D3, Fire Module)

2 ☒ Confined to room of origin
3 ☐ Confined to floor of origin
4 ☐ Confined to building of origin
5 ☐ Beyond building of origin

J3 Number of Stories Damaged By Flame

Count the roof as part of the highest story

— Number of stories w/ minor damage (1 to 24% flame damage)

— Number of stories w/ significant damage (25 to 49% flame damage)

— Number of stories w/ heavy damage (50 to 74% flame damage)

1 — Number of stories w/ extreme damage (75 to 100% flame damage)

K Type of Material Contributing Most To Flame Spread

☒ Check if no flame spread OR if same as Material First Ignited (Block D4, Fire Module) OR if unable to determine → Skip to Section L

K1

— Item contributing most to flame spread

K2

— Type of material contributing most to flame spread

Required only if item contributing code is 00 or <70.

L1 Presence of Detectors ☆

(In area of the fire)

N ☒ None Present → Skip to section M
1 ☐ Present
U ☐ Undetermined

L2 Detector Type

1 ☐ Smoke
2 ☐ Heat
3 ☐ Combination smoke and heat
4 ☐ Sprinkler, water flow detection
5 ☐ More than one type present
0 ☐ Other
U ☐ Undetermined

L3 Detector Power Supply

1 ☐ Battery only
2 ☐ Hardwire only
3 ☐ Plug-in
4 ☐ Hardwire with battery
5 ☐ Plug-in with battery
6 ☐ Mechanical
7 ☐ Multiple detectors & power supplies
0 ☐ Other
U ☐ Undetermined

L4 Detector Operation

1 ☐ Fire too small to activate
2 ☐ Operated → Complete Block L5
3 ☐ Failed to operate → Complete Block L6
U ☐ Undetermined

L5 Detector Effectiveness

Required if detector operated

1 ☐ Alerted occupants, occupants responded
2 ☐ Alerted occupants, occupants failed to respond
3 ☐ There were no occupants
4 ☐ Failed to alert occupants
U ☐ Undetermined

L6 Detector Failure Reason

Required if detector failed to operate

1 ☐ Power failure, shutoff, or disconnect
2 ☐ Improper installation or placement
3 ☐ Defective
4 ☐ Lack of maintenance, includes not cleaning
5 ☐ Battery missing or disconnected
6 ☐ Battery discharged or dead
0 ☐ Other
U ☐ Undetermined

M1 Presence of Automatic Extinguishing System ☆

N ☒ None Present
1 ☐ Present
2 ☐ Partial System Present
U ☐ Undetermined

→ Complete rest of Section M

M2 Type of Automatic Extinguishment System

Required if fire was within designed range oAES

1 ☐ Wet-pipe sprinkler
2 ☐ Dry-pipe sprinkler
3 ☐ Other sprinkler system
4 ☐ Dry chemical system
5 ☐ Foam system
6 ☐ Halogen-type system
7 ☐ Carbon dioxide (CO_2) system
0 ☐ Other special hazard system
U ☐ Undetermined

M3 Operation of Automatic Extinguishing System

Required if fire was within designed range

1 ☐ Operated/effective (go to M4)
2 ☐ Operated/not effective (go to M4)
3 ☐ Fire too small to activate
4 ☐ Failed to operate (go to M5)
0 ☐ Other
U ☐ Undetermined

M4 Number of Sprinkler Heads Operating

Required if system operated

— Number of sprinkler heads operating

M5 Reason for Automatic Extinguishing System Failure

Required if system failed or not effective

1 ☐ System shut off
2 ☐ Not enough agent discharged
3 ☐ Agent discharged but did not reach fire
4 ☐ Wrong type of system
5 ☐ Fire not in area protected
6 ☐ System components damaged
7 ☐ Lack of maintenance
8 ☐ Manual intervention
0 ☐ Other
U ☐ Undetermined

NFIRS-3 Revision 01/01/07

A

FDID	State	Incident Date (MM DD YYYY)	Station	Incident Number	Exposure		
27097 ☆	MA ☆	02 05 2013 ☆	HQ	13-IN-428 ☆	0 ☆	☐ Delete ☐ Change	NFIRS - MA State

B1 Critical Incident

☐ Yes
☒ No

If no, Skip to section C

B2 Team Mobilized

☐ Yes
☐ No

B3 Circumstances

Max of 3 choices.

1 ☐ Serious injury or line of duty death
2 ☐ Suicide of a co-worker
3 ☐ Death or serious injury to a child
4 ☐ Prolonged failed rescue
5 ☐ Multi-casualty incident/disaster
6 ☐ Victim is known to the responder
7 ☐ Any incident where the personal safety of the responder is jeopardized
8 ☐ Incidents with excessive media interest
9 ☐ Any incident with unusually strong emotional components

C1 Insurance Information

Enter insurance information for the owner entered in section K2 of the Basic form (NFIRS-1).

Main Street American
Insurance Company

Total amount $ ☐,☐☐☐,☐☐☐,☐☐☐

C2 Car Stolen

Was the vehicle entered in section H2 of the Fire form (NFIRS-2) stolen?

☐ Yes
☐ No

D1 HazMat Tier Levels

01 ☐ Hazard & Risk Assessment
02 ☐ Short Term Operations
03 ☐ Long Term Operations
04 ☐ Multiple Team Operations

D2 Number of Entries

☐☐☐

Number of entries made by emergency personnel

D3 Suit/PPE Levels

01 ☐ Level A
02 ☐ Level B
03 ☐ Level C
04 ☐ Level D

EXHIBIT 8

Copy of Unitil records for installation and discontinuation
of 214 Lunenburg Street, Front, gas service

~~GAS MAIN~~ ~~EXTENSION~~
GAS SERVICE REPAIR
(CROSS OF HEADINGS WHICH DO NOT APPLY)

NO. 214 Luneburg STREET, CITY

DATE 10/9/42 ORDER NO. 4 TE-02417

CUSTOMER Fbg Auto Elec

SERVICE SIZE 1½ STARTS

RUNS change Location of gas service on account of new construction

TIME CONSUMED

Hurley 2 Hrs [illegible]	
[illegible] 2 Hrs [illegible]	
[illegible]	

MATERIALS USED

20 Ft of 1½" Pipe 1. 1½" 45° Ell 2. 1½" [illegible]
1. 1½" [illegible] Coupling

WORK BEGUN Oct 9-1942

WORK FINISHED Oct 9-1942

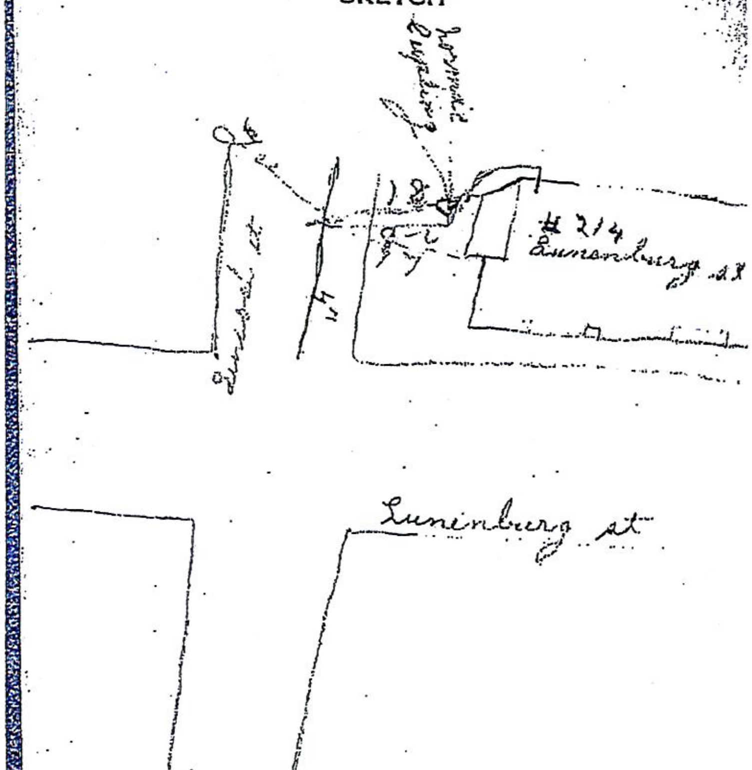
Hurley
FOREMAN

N. B. Sketches shown on back.

Form 363 6-40

LOCATION OF
LINE OF MAIN
END OF MAIN
DEPTH OF MAIN

SKETCH



~~GAS MAIN~~ ~~EXTENSION~~
GAS SERVICE REPAIR
(CROSS OFF HEADINGS WHICH DO NOT APPLY)

No. 214 Lunenburg STREET, CITY

DATE 11-16-45 ORDER NO. W.T.C.-5977

CUSTOMER Fbg Auto Electric

SIZE SERVICE ~~MAIN~~ 1½" STARTS

RUNS Service plugged with napthalene

TIME CONSUMED

Hurley 6 hrs 3633	
[illegible] 6 hrs 3633	
Kangas 6 hrs 3633	

MATERIALS USED

0
1. 1½"×1"×1½" St tee 1. 1½" St ell 1. 1½" plug 1. 1½"×6" nipple 2. 1½" Norman Couplings 3633

WORK BEGUN Nov 16-1945

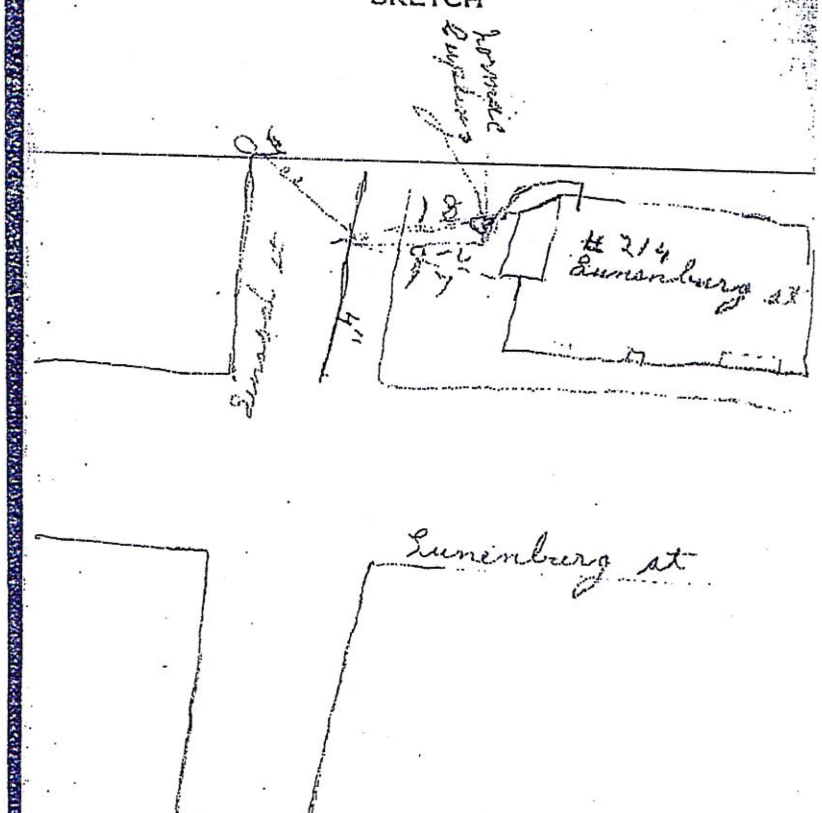
WORK FINISHED Nov 17-1945

Hurley
FOREMAN

N. B. Sketches shown on back.

LOCATION OF
LINE OF MAIN
END OF MAIN
DEPTH OF MAIN

SKETCH



Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

For the period of time between February 5, 2009 and February 5, 2013, there were four (4) service work orders for 5 Linwood Street, and no service work orders for either 49 Linwood Street or 214 Lunenburg Street. Company records documenting these service work orders are provided in the following attachments to this response.

Address	Date	Service Work Order
5 Linwood St.	3/16/2012	IR PL 1-15 ATTACHMENT D
5 Linwood St.	9/18/2012	IR PL 1-15 ATTACHMENT E
5 Linwood St.	9/18/2012	IR PL 1-15 ATTACHMENT F
5 Linwood St.	10/1/2012	IR PL 1-15 ATTACHMENT G
49 Linwood St.	None	None
214 Lunenburg St. (Rear)	None	None

Abandoned Service Lines

The Company has identified one service line at 214 Lunenburg Street, Fitchburg that was installed in 1942 and was believed to have been abandoned. This service was separate and distinct from the active service to the rear of 214 Lunenburg Street, and had provided service to a separate building at the same address approximately 70 years ago. A record search identified a service card with an installation date of 10/9/1942, and a subsequent record of the service being plugged on 11/16/1945. These service records are provided as IR PL 1-15 Attachment H. There was no record of a service at this address (active or inactive) in the Company's Compliance Management System (CMS) or Customer Information System (CIS).

During the February 5, 2013 emergency response and incident investigation, the Company identified a gas meter assembly inside the basement of 214 Lunenburg Street, and an apparent service connection at the 4" cast iron gas main. The Company excavated at the outside wall of the building, but did not find a buried service pipe. A pressure test was conducted on the service line at the main, and the test held a 15 minute test at 10 psig. The test record is provided as IR PL 1-15 Attachment I.

Person Responsible: Dan Golden, Stacey Kilroy, Christopher LeBlanc

Date: April 18, 2013

EXHIBIT 9

Copy of Unitil records of abandonment and reinstallation
of gas service to 214 Lunenburg Street, Rear

GAS MAIN
GAS SERVICE

EXTENSION
REPAIR

(CROSS OFF HEADINGS WHICH DO NOT APPLY)

No. 214 Lunenburg St. STREET, CITY Fitchburg

DATE 11-8-83 ORDER No.

CUSTOMER East Side Motors

SIZE 3/4" SERVICE MAIN H.P. STARTS

RUNS Coated steel

TIME CONSUMED

Abandon gas
Lee Downes
C.6317 10/20/93
T-5 Nick Hunter,
Sullivan 3/hrsea
Expander plug

MATERIALS USED a Cap

ON ACTIVE GAS ROSTER
ON 10-15-96

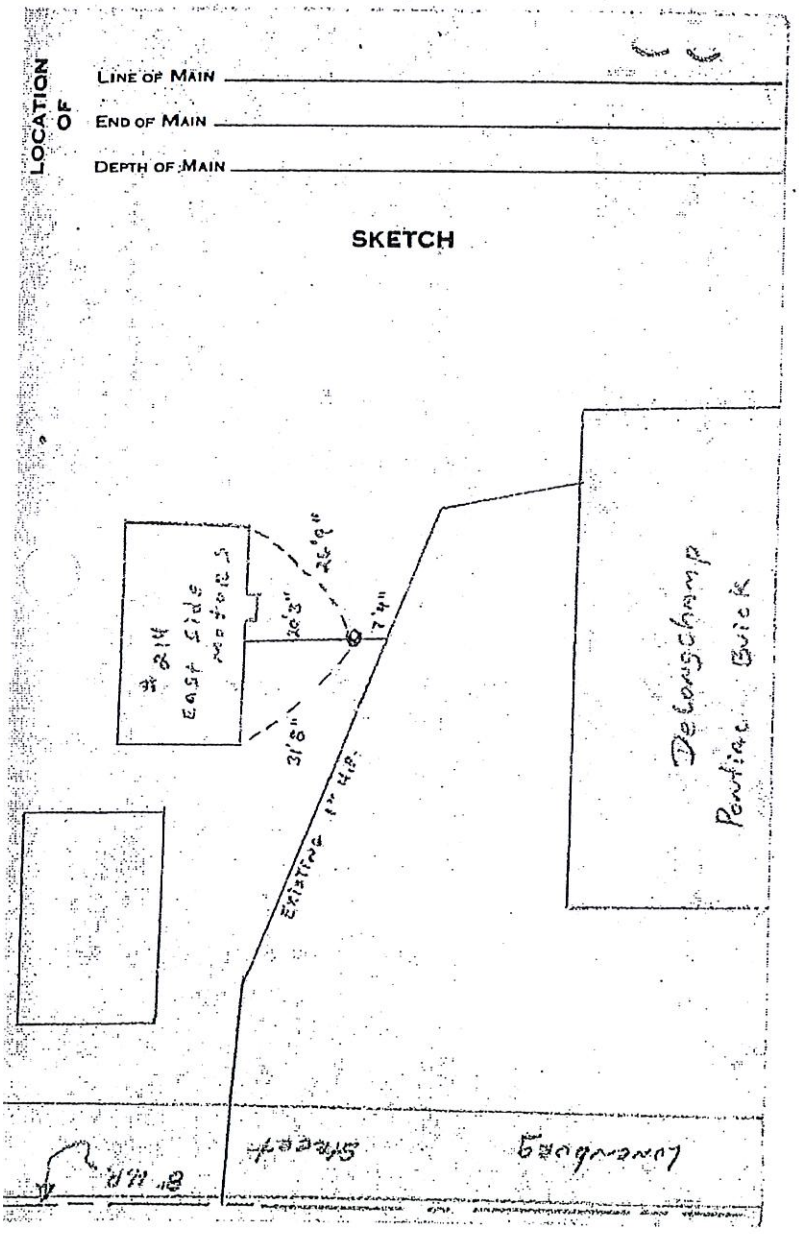
WORK BEGUN

WORK FINISHED

FOREMAN

N. B. Sketches shown on back.

FORM 0-3630


LOCATION OF
LINE OF MAIN
END OF MAIN
DEPTH OF MAIN
SKETCH
#814
East Side
Motors
26'9"
26'3"
7'4"
31'6"
Existing 12" W.M.
DeLongchamp
Pontiac Buick
Lakewood
Street
8" W.M.

Unitil — DISTRIBUTION WORK ORDER

At House/ To House	At Lot / To Lot	Street Address	TOWN
		Lunenburg ST	Fitchburg

Building #	Unit #	Suite No.	Apt. No	Intersection: From / To	Fed From Street
214					Lunenburg st.

Account/CWO #	CMS Service #	Business Name		Work Start Date	Work Completed Date
60436	534346		☐ Public Building ☐ Residential Building ☒ Commercial Building	9-27-13	9-27-13

MAIN Work Performed (Circle All that Apply): New | Replacement Partial / Full | Full Retire | Partial Retire | Tie-In | Stub | Remediation | Other _____

SERVICE Work Performed (Circle All that Apply): (New) | Replacement Partial / Full | Full Retire | Partial Retire | Tie-Over | Stub | Remediation | Other _____

	Pipe Installed	Pipe Installed	Main Exposed Pipe	Service Exposed Pipe	Main Retired Pipe	Service Retired Pipe
Main ID #						
System ID#	Fitch. hp			Fitch. hp		
Pipe Size	1" IPS			1" CS		
MFG Lot #	W7008					
SDR#	DR11					
MFG Date	01 30 13					
Length	41'			1'		
Pressure	high			high		
Pipe Material	HDPE			CS		
Depth	30"			30"		
Coat Type	HDPE			CS		
CS Coat Condition			G - MD - ED	(G) MD - ED		
Pipe Condition	(G) F - P - VP	G - F - P - VP	G - F - P - VP	(G) F - P - VP	G - F - P - VP	G - F - P - VP
Pit Depth						
Class Location	Class 1	Class 2	(Class 3)	Class 4		
Soil Conditions	(Gravel)	Sand	Clay	Rocky		
Installation Method	Direct Burial 41' ft		Insert _____ ft		Trenchless _____ ft. Open Trench _____ ft.	

Existing At Site

YES UNK

- ☐ ☐ 1. Meter Fit
- ☐ ☐ 2. Curb Valve — ST | SW | Property
- ☐ ☐ 3. Excess Flow Valve — 400 550 700 2600
- ☐ ☐ 4. Anode
- ☐ ☐ 5. Meter Protection
- ☐ ☐ 6. Riser Tag
- ☐ ☐ 7. Farm Tap/PLV

Installed on this WO

- ☒ 1. Meter Fit
- ☒ 2. Curb Valve — ST | SW | ~~Property~~
- ☐ 3. Excess Flow Valve — 400 550 700 2600
- ☐ 4. Anode
- ☐ 5. Meter Protection
- ☐ 6. Riser Tag
- ☐ 7. Farm Tap/PLV

Serial # _____

Locations

	Meter	Regulator
In	☐	☐
Out	☒	☒
Front	☐	☐
Back	☐	☐
Left	☐	☐
Right	☒	☒

Pressure Test Data

Test Date On	9-27-13
Time On	10:30
Test Date Off	10:45
Time Off	9-27-13
Pressure at Start	155
Pressure at End	155
Duration	15 min.

Pre-Tested Pipe: ☐ ID# _____

Medium: (X) Air | ☐ Nitro

Gauge: (X) | ID# _____

Chart: ☐ | ID# _____

Soap Test: (X) Y | ☐ N

Pressure Test: (X) Y | ☐ N

List Service Meter #'s

_____

_____

_____

GPS Date

9, 27, 13

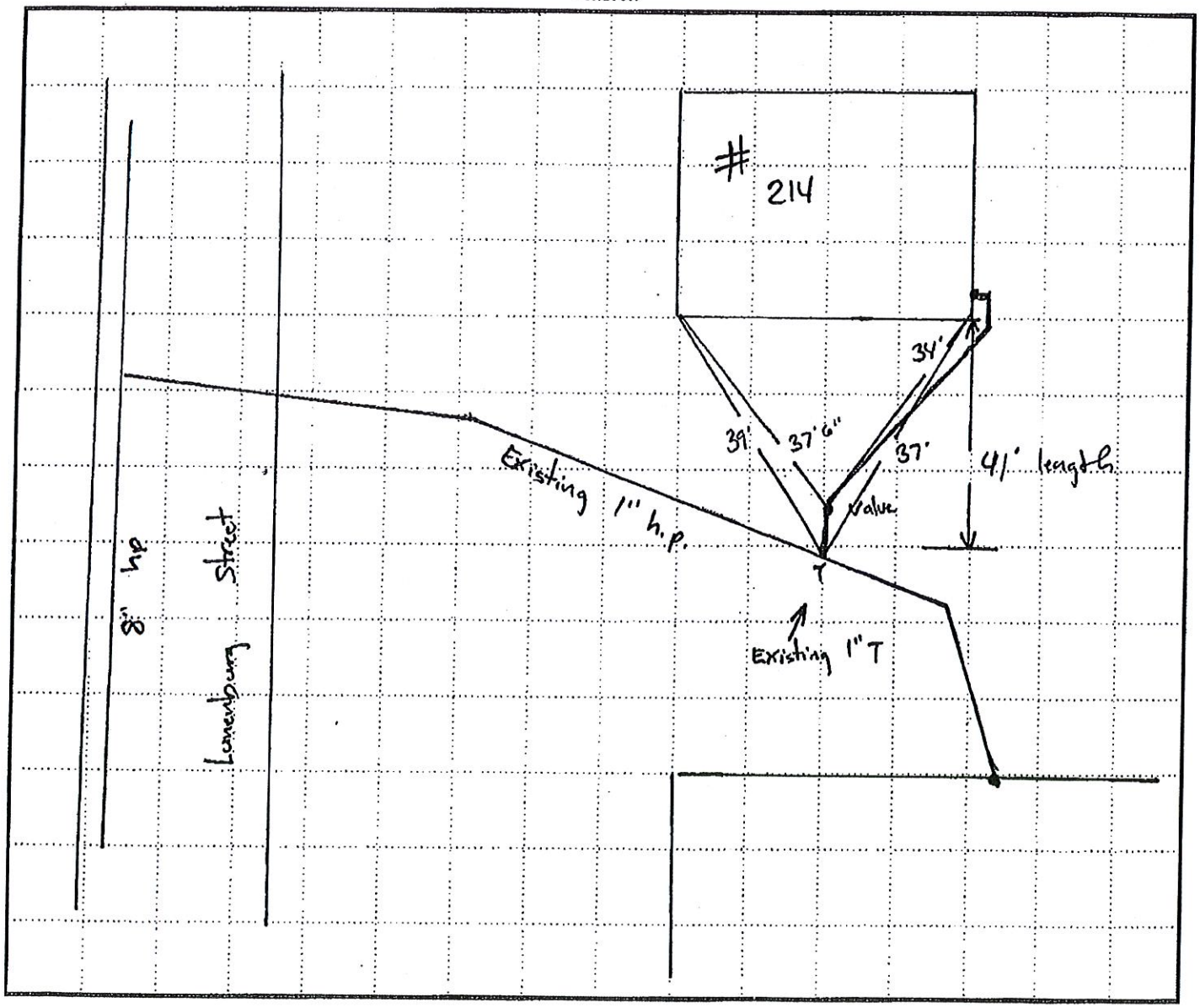
Detailed Work Description and Comments

Supervisor Signature Mark DiMeo Crew Signature Chad Stick

U-DWO-4/13

Opening Site # 1	Opening Site # 2	Opening Site # 3
Opening Site: ☐ Street ☐ Sidewalk ☐ Lawn (Priv Prop)	Opening Site: ☐ Street ☐ Sidewalk ☐ Lawn (Priv Prop)	Opening Site: ☐ Street ☐ Sidewalk ☐ Lawn (Priv Prop)
Paving Cond Notified – ☐ Yes ☐ No	Paving Cond Notified – ☐ Yes ☐ No	Paving Cond Notified – ☐ Yes ☐ No
Original Surface: ☐ Asphalt ☐ Concrete ☐ Cobblestone ☐ Conc. & Asph ☐ Brick & Cobble ☐ Brick ☐ Grass ☐ Gravel	Original Surface: ☐ Asphalt ☐ Concrete ☐ Cobblestone ☐ Conc. & Asph ☐ Brick & Cobble ☐ Brick ☐ Grass ☐ Gravel	Original Surface: ☐ Asphalt ☐ Concrete ☐ Cobblestone ☐ Conc. & Asph ☐ Brick & Cobble ☐ Brick ☐ Grass ☐ Gravel
Length: ___ ft Width: ___ ft Thickness: ___ in # DCP Drops: ___ # of Lifts: ___	Length: ___ ft Width: ___ ft Thickness: ___ in # DCP Drops: ___ # of Lifts: ___	Length: ___ ft Width: ___ ft Thickness: ___ in # DCP Drops: ___ # of Lifts: ___
Paving Method: _____	Paving Method: _____	Paving Method: _____

SKETCH



Total Length of Service Main to Meter: 41' **Continuity Check** ☒

EXHIBIT 10

Unitil winter patrols

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-5:

Please provide the Division with all documentation memorializing the leakage surveys conducted on Linwood Street and the area of 214 Lunenburg Street, Fitchburg from:

(1) December 1, 2009 to February 5, 2013, pursuant to Unitil's Winter Patrol Procedures; and

(2) Include in your response a copy of the Operator's Winter Patrol Procedures.

Response:

(1) Pursuant to the Company's Winter Patrol Procedures, Linwood Street and the area of 214 Lunenburg St were leak surveyed during winter conditions from the period of Dec 1, 2009 through February 5, 2013 as follows:

- Winter months 2009 – 2010 the area was surveyed 5 times.
- Winter months 2010 – 2011 the area was surveyed 6 times.
- Winter months 2011 – 2012 The area was surveyed 3 times. This can be attributed to a warmer than average winter with little to no frost conditions.
- Winter months 2012-2013 the area was surveyed 8 times.

Until the main break on February 5, 2013 no leakage was detected in this area. Documentation of winter surveys is provided as IR PL 1-5 ATTACHMENT A.

In addition to winter patrols, the area of Linwood Street and 214 Lunenburg Street were leak surveyed an additional 11 times as part of Unitil's business district and distribution system surveys. Until the main break on February 5, 2013 no leakage was detected in this area. Documentation of distribution system surveys is provided as IR PL 1-5 ATTACHMENT B. Documentation of business district surveys is provided as IR PL 1-5 ATTACHMENT C.

For convenience, a summary of the leakage surveys for Linwood Street and the area of 214 Lunenburg Street, Fitchburg is provided in the table below.

EXHIBIT 11

Records of Unitil walking and mobile surveys

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-14:

Provide a map(s) identifying;

(1) the streets and boundaries that Unitil conducted leak surveys (flame ionization unit) on Tuesday, February 5,2013, in the vicinity of the Incident

(2) identify on this map the areas that Unitil conducted a walking survey and those areas where the Operator conducted a mobile survey.

Response:

On Tuesday, February 5, 2013, as part of our post incident emergency response the Company conducted mobile leak surveys of gas distribution mains in close proximity to the incident. In addition walking leak surveys of gas service lines in close proximity were also conducted. The streets that were mobile leak surveyed are as follows:

- Oakland Street
- Redman Place
- Summit Street
- Lunenburg Street
- Garland Street
- Berry Street
- Linwood Street

The streets on which service lines were surveyed are as follows:

- Redman Place
- Oakland Street
- Lunenburg Street
- Linwood Street

Unitil — Leak Investigation Report

Distribution [X] Transmission [ ]

Date	Time Reported	Reported By	Employee	System ID #	Leak ID #
2-5-13			B Mo		

Intersection: To/From	Street Address	TOWN	Meter #
	9 Redmond St	Fitchburg	

Method of Test		Unit ID# / Serial #
LMD	X	1300211
FI		
CGI	X	6327231
SOAP		
PMD		

Pressure	
High	
Intermediate	
Low	X

Cover			
Asphalt		Gravel	
Concrete	X	Dirt	
Brick		Other	
Cobble		Exposed	

Leak Classification	
Class 1	X
Class 2 Priority 1	
Class 2	
Class 3	
Class 1 Above Ground Haz	
Fit Leak Before Meter	
Fit Leak After Meter	

Survey Type			
Odor Complaint		Main	
Blasting		Pre-Paving	
High Risk Patrol		Public Building	
Business District		Re-Check	
CI Encroachment		Service Line	
Critical Valve		Winter Patrol	
Exposed Pipe		Gate Station	
HP Line		Other Leak Det	X

Gas Detected In:	
Manhole	
Catch Basin	
Valve	
Foundation	X
Bar Hole	
Atmosphere	X
Customer Home	
Gate Station	

Leak Type	
Main	
Meter Assembly	
Service	X
Regulator	
Riser	
Valve	
Unknown	

GPS Date

Y	N		
Odor Present		ReSurvey	Clear

Drive R:
Bob M:

- Service Gone / Fix Work
- Street Dept. on Site

ORIGINAL

Comments: Gas Leak Detected While Performing Walkouts Survey of Redmond Place. Upgraded Fissure Services To Outside. By Street Dept

U-LI-3/11

Supervisor Signature _____

Unitil Interior Gas Leak / CO Investigation Order — FORM No. 4-29521-08

Customer Name / Location: LORI PROVOSTY

Address: 9 REDMAN PLACE

City: FITCHBURG Apt/Floor: /

Time: Arrived: 0930 Departed: 1032 Made Safe: 0945

Responder: B. MACDONALD, D. REISE Truck No. 21 DATE: 2-5-13

INTERIOR GAS LEAK INVESTIGATION

Leak Found: Yes: ☒ No: ☐ Trace: ☐ L.E.L: 100 % Gas: _____

☒ At Service Entrance ☐ At H.P. Regulator ☐ Other _____

☐ At Gas Meter(s) ☐ On Customers Piping _____

☐ At Bracket or Header ☐ On Customers Appliance _____ (Appliance)

Status:

☒ Repaired Permanently ☒ Left On

☐ Repaired Temporarily ☐ Left Off

☐ Red Tagged _____ (Appliance) ☐ Reffered To: _____ (Name/Department)

CARBON MONOXIDE (CO) INVESTIGATION

CO Found: YES ☐ NO: ☒

AREA OF	ROOM LOCATION	PPM
Upon Entering		
Furnace/Boiler		
Water Heater		
Range/Oven		
Gas Dryer		
Fireplace		

AREA OF	ROOM LOCATION	PPM
Space Heater		
	Bedroom # 1	
	Bedroom # 2	
	Bedroom # 3	
Other		
Other		

Status:

☐ Repaired Permanently ☐ Left On ☐ Evacuation

☐ Repaired Temporarily ☐ Left Off ☐ Ventilation

☐ Red Tagged _____ (Appliance) ☐ Reffered To: _____ (Name/Department (Fire, Police, Street, etc.))

INTERIOR PIPING INSPECTION (Until Owned) **Required**

Leak Survey Yes: ☒ No: ☐ Leak Found: Yes: ☒ No: ☐

Location (of leak): SERVICE ENTRANCE Trace: ☐ L.E.L: 100 % Gas: _____

Leak Repaired: Yes: ☒ No: ☐ Corrosion Inspection: Yes: ☒ No: ☐

Corrosion Inspection: Yes: ☒ No: ☐ Corrosion Present: Yes: ☒ No: ☐

Pipe Condition ☐ Good ☒ Fair ☐ Poor

Additional Work Needed: Yes: ☒ No: ☐ Type: UPGRADED SERVICE (Upgrade, Corrosion Repair, Leak Repair)

Investigation Comments: DETECTED GAS LEAK, LOCATED AT SERVICE ENTRANCE (VALVE) WHILE PERFORMING WALKING SURVEY. SERVICE WAS UPGRADED, MOVED OUTSIDE BY STREET. PEPT.

EXHIBIT 12

Records of Unitil leakage and corrosion surveys of the gas services on Linwood Street and 214 Lunenburg Street

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-17:

For those gas customers on Linwood Street and 214 Lunenburg Street, Fitchburg, provide:

(1) the date and results of all leakage surveys of the gas services from February 5, 2009 to February 5, 2013;
(2) provide the date and results of the last atmospheric corrosion survey of the inside service lines performed prior to February 5, 2013, at these locations.

Response:

During the time period of February 5, 2009 to February 5, 2013, leakage surveys and atmospheric corrosion surveys were conducted at 5 Linwood St., 49 Linwood St. and 214 Lunenburg St. (Rear). All surveys were conducted in accordance with the Company's O&M procedures. No leaks or corrosion were found at any of these service locations. On the evening of February 5, 2013, leak surveys were again conducted at 5 Linwood St., 49 Linwood St. and 214 Lunenburg St. (Rear). No leaks were found at any of these service locations. Company records documenting the results of these leakage and atmospheric corrosion surveys are provided in the attachments to this response, as specified in the tables below.

(1) The date and results of all leakage surveys of the gas services of customers on Linwood Street and 214 Lunenburg Street from February 5, 2009 to February 5, 2013 are provided in the table below.

Address	Survey Date	Result	Attachments Documenting Inspection Results
5 Linwood St.	8/2/2011	No Leak	IR PL 1-17 ATTACHMENT B
5 Linwood St.	2/5/2013	No Leak	IR PL 1-17 ATTACHMENT F
49 Linwood St.	7/20/2012	No Leak	IR PL 1-17 ATTACHMENT C
49 Linwood St.	2/5/2013	No Leak	IR PL 1-17 ATTACHMENT F
214 Lunenburg St.	10/20/2009	No Leak	IR PL 1-17 ATTACHMENT D
214 Lunenburg St.	8/15/2012	No Leak	IR PL 1-17 ATTACHMENT E
214 Lunenburg St.	2/5/2013	No Leak	IR PL 1-17 ATTACHMENT G

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

(2) The date and results of the last atmospheric corrosion survey of the inside service lines of customers on Linwood Street and 214 Lunenburg Street performed prior to February 5, 2013 are provided in the table below.

Address	Survey Date	Result	Attachments Documenting Inspection Results
5 Linwood St.	8/2/2011	No Corrosion Pipe Condition Good	IR PL 1-17 ATTACHMENT A IR PL 1-17 ATTACHMENT B
49 Linwood St.	7/20/2012	No Corrosion Pipe Condition Good	IR PL 1-17 ATTACHMENT A IR PL 1-17 ATTACHMENT C
214 Lunenburg St.	8/15/2012	No Corrosion Pipe Condition Good	IR PL 1-17 ATTACHMENT A IR PL 1-17 ATTACHMENT E

Person Responsible: Stacey Kilroy, Christopher LeBlanc **Date:** April 18, 2013

IR PL 1-17 ATTACHMENT A
LINWOOD AND 214 LUNENBURG SERVICE LINE AND EXPOSED PIPE SURVEYS

CMS Service ID #	Service Address	Maintenance of Service Lines	TASK	Work Order/ID #
1701	5 Linwood St.	8/2/2011	Service Line/ Exposed Pipe Survey	56436/56608
524259	49 Linwood St.	7/20/2012	Service Line/ Exposed Pipe Survey	76978/73938
594	214 Lunenburg St. Rear	10/20/2009	Service Line/ Exposed Pipe Survey	26185/25655
594	214 Lunenburg St. Rear	8/15/2012	Service Line/ Exposed Pipe Survey	78883/75104

EXHIBIT 13

Unitil records of the gas main underlying Linwood Street

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-4:

Provide records for the main on Linwood Street, including but not limited to:

(1) installation date,
(2) MAOP,
(3) leak history from January 1, 2010 to February 6, 2013 and
(4) operating pressure at the time of the Incident.

Response:

(1) The Linwood Street gas main identified as Unitil Main I.D. 34606 was installed on September 16, 1929. The original gas mains installation card is provided as IR PL 1-4 Attachment A and IR PL 1-4 Attachment B.

(2) The gas main on Linwood Street is part of the Fitchburg low pressure distribution system and has a MAOP of 14" w.c. A distribution system map with MAOP and the location of nearby district regulating stations is provided as IR PL 1-4 Attachment C.

(3) The company has reviewed the leak history for Linwood Street and there have been no leaks associated with gas mains on this street.

(4) Please see Company response to IR PL 1-19

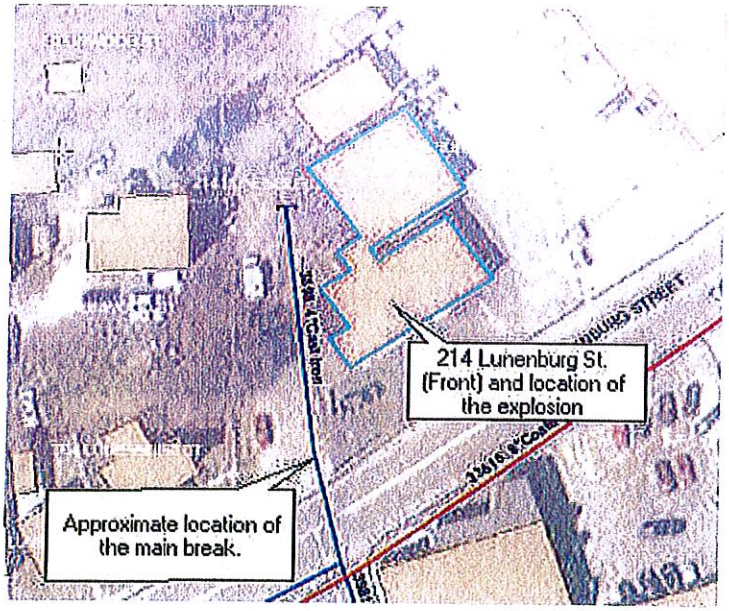
Person Responsible: Stacey Kilroy, Chris LeBlanc **Date:** April 18, 2013

Section B: Background and Site Description

3. BACKGROUND and SITE DESCRIPTION

The incident occurred at 214 Lunenburg Street which is a corner property at the intersection of Lunenburg Street and Linwood Street.[4] Lunenburg Street has a paved road surface and consists of a mixture of residential and small commercial/industrial businesses. Linwood Street, the location of the incident, is a short dead end gravel road that primarily provides access to No. 5 Linwood St., a residential structure. The gas main on Linwood Street was 4" cast iron and was installed on September 16, 1929[5] at an approximate depth of 36". On February 5, 2013 the distribution system had experienced prolonged periods of cold and frost conditions at this location were approximately 24 – 36 inches. The soil conditions were frozen gravel followed by a loose and porous fly ash[6] that served as the substrate for the gravel road. Both Lunenburg St. and Linwood St. were subject to winter frost patrols due to the existence of cast iron pipe on both streets.

Figure 1:



[4] A map depicting the distribution system and location of the incident is provided as Appendix B.

[5] The original main installation card is provided as Appendix C.

[6] Fly-Ash is the fine particles of ash resulting from the combustion of a solid fuel.

GAS MAINS

Fitchburg Gas & Electric Light Co.

Card # 9

No. LINWOOD Street, City

Date Sept 16-1929 Order No. C.O.G. 1466

Customer Sidney R. Rafuse & John B. Faubert

Size ~~Service~~ Main 4" Starts from Lunenburg

Runs State Road and extend northerly 132 feet to reach house #5 Sidney R. Rafuse

TIME CONSUMED

20 Hrs G1466 at 62½ Pr	
10 Hrs G1466 at at 55 Pr	
60 Hrs G1466 at 50 Pr	
8 Hrs G1466 at 57½ Pr	

MATERIALS USED

10 Lengths of 4" Cast iron Pipe

120 Ft of 4" Cast iron pipe 4 lbs of Cem

10 lbs of sand 5 lbs of rope yarn

1 Gal of Kerosene 2 1" 4 Plugs G1466

Work Begun Sept 23-1929

Work Finished Sept 24-1929

Cross D. Hurley Foreman

JS. 11/27/29 N. B. Sketches shown on back.

FORM 065 7-24

EXHIBIT 14
Copy of Unitil's pressure recording chart from nearest regulator to the Incident on February 5, 2013

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-19:

Provide a copy of the pressure chart or reading of the nearest regulator station servicing those gas customers on Linwood Street and 214 Lunenburg Street on February 5, 2013.

Response:

Tabular pressure data for February 5, 2013 at three low pressure regulator stations in the vicinity of the incident site and a map depicting the station locations relative to the incident site are provided as attachments:

IR PL 1-19 ATTACHMENT A: Is a copy of the distribution map provided in the Company response to IR PL 1-4 that provides the location of district regulating stations in relation to Linwood Street.

IR PL 1-19 ATTACHMENT B: Sawyer Passway Regulator Station Outlet Pressure Report

IR PL 1-19 ATTACHMENT C: Ross St. Regulator Station Outlet Pressure Report

IR PL 1-19 ATTACHMENT D: Klondike St., Regulator Station Outlet Pressure Report

Person Responsible: Jonathan Pfister
Christopher LeBlanc

Date: April 18, 2013

Output values for UNITIL.FGE_SAWYER_OUT_PRESS.F_CV (99)

99 returned in 0 seconds

Timestamp	Value	Quality	Comments
02/05/2013 00:09:00	11.03982	Good	
02/05/2013 00:24:00	11.07111	Good	
02/05/2013 00:39:00	11.01604	Good	
02/05/2013 00:54:00	11.12368	Good	
02/05/2013 01:09:00	11.12619	Good	
02/05/2013 01:24:00	11.18151	Good	
02/05/2013 01:39:00	11.15222	Good	
02/05/2013 01:54:00	11.09489	Good	
02/05/2013 02:09:00	11.16273	Good	
02/05/2013 02:24:00	11.01604	Good	
02/05/2013 02:39:00	11.02956	Good	
02/05/2013 02:54:00	11.10966	Good	
02/05/2013 03:09:00	11.10766	Good	
02/05/2013 03:24:00	11.05059	Good	
02/05/2013 03:39:00	11.28514	Good	
02/05/2013 03:54:00	11.23007	Good	
02/05/2013 04:09:00	11.15497	Good	
02/05/2013 04:24:00	11.18426	Good	
02/05/2013 04:39:00	11.29741	Good	
02/05/2013 04:54:00	11.14471	Good	
02/05/2013 05:09:00	11.34022	Good	
02/05/2013 05:24:00	11.35173	Good	
02/05/2013 05:39:00	11.29441	Good	
02/05/2013 05:54:00	11.37777	Good	
02/05/2013 06:09:00	11.41457	Good	
02/05/2013 06:24:00	11.48015	Good	
02/05/2013 06:39:00	11.42608	Good	
02/05/2013 06:54:00	11.38778	Good	
02/05/2013 07:09:00	11.42758	Good	
02/05/2013 07:24:00	11.38953	Good	
02/05/2013 07:39:00	11.35098	Good	
02/05/2013 07:54:00	11.46188	Good	
02/05/2013 08:09:00	11.4023	Good	
02/05/2013 08:24:00	11.45337	Good	
02/05/2013 08:39:00	11.3242	Good	
02/05/2013 08:54:00	11.33821	Good	
02/05/2013 09:09:00	11.38903	Good	
02/05/2013 09:24:00	11.27438	Good	
02/05/2013 09:39:00	11.35274	Good	
02/05/2013 09:54:00	11.32094	Good	
02/05/2013 10:09:00	11.2113	Good	
02/05/2013 10:24:00	11.20729	Good	
02/05/2013 10:39:00	11.30092	Good	
02/05/2013 10:54:00	11.28715	Good	
02/05/2013 11:09:00	11.28715	Good	
02/05/2013 11:24:00	11.16273	Good	
02/05/2013 11:39:00	11.20829	Good	
02/05/2013 11:54:00	11.16323	Good	
02/05/2013 12:09:00	11.16499	Good	
02/05/2013 12:24:00	11.19453	Good	
02/05/2013 12:39:00	11.07387	Good	
02/05/2013 12:54:00	11.04959	Good	
02/05/2013 13:09:00	11.19603	Good	
02/05/2013 13:24:00	11.15948	Good	
02/05/2013 13:39:00	11.06636	Good	

02/05/2013 13:54:00	11.09915	Good
02/05/2013 14:09:00	11.09239	Good
02/05/2013 14:24:00	11.07662	Good
02/05/2013 14:39:00	10.9885	Good
02/05/2013 14:54:00	10.9512	Good
02/05/2013 15:09:00	10.92117	Good
02/05/2013 15:24:00	10.91402	Good
02/05/2013 15:39:00	10.87335	Good
02/05/2013 15:54:00	10.94645	Good
02/05/2013 16:09:00	10.67559	Good
02/05/2013 16:24:00	10.69211	Good
02/05/2013 16:39:00	10.87435	Good
02/05/2013 16:54:00	10.84306	Good
02/05/2013 17:09:00	10.84306	Good
02/05/2013 17:24:00	10.84306	Good
02/05/2013 17:39:00	10.84306	Good
02/05/2013 17:54:00	10.84306	Good
02/05/2013 18:09:00	10.84306	Good
02/05/2013 18:24:00	10.84306	Good
02/05/2013 18:39:00	10.84306	Good
02/05/2013 18:54:00	10.84306	Good
02/05/2013 19:09:00	10.84306	Good
02/05/2013 19:24:00	10.84306	Good
02/05/2013 19:39:00	10.84306	Good
02/05/2013 19:54:00	10.84306	Good
02/05/2013 20:09:00	10.84306	Good
02/05/2013 20:24:00	10.84306	Good
02/05/2013 20:39:00	10.84306	Good
02/05/2013 20:54:00	10.84306	Good
02/05/2013 21:09:00	10.84306	Good
02/05/2013 21:24:00	10.84306	Good
02/05/2013 21:34:00	10.84306	Good
02/05/2013 21:34:30	0 Good	
02/05/2013 21:36:30	0 Good	
02/05/2013 21:37:00	11.06536	Good
02/05/2013 21:52:00	11.03506	Good
02/05/2013 22:07:00	11.00452	Good
02/05/2013 22:22:00	10.97824	Good
02/05/2013 22:37:00	10.95596	Good
02/05/2013 22:52:00	11.0248	Good
02/05/2013 23:07:00	10.92692	Good
02/05/2013 23:22:00	10.92267	Good
02/05/2013 23:37:00	11.07637	Good
02/05/2013 23:52:00	10.88562	Good

Output values for UNITIL.FGE_SAWYER_OUT_PRESS.F_CV (99)

EXHIBIT 15

History of repairs of the gas main on Linwood Street

Commonwealth of Massachusetts
Department of Public Utilities
Pipeline Engineering and Safety Division

Fitchburg Gas and Electric Light Company d/b/a Unitil
Unitil – 214 Lunenburg Street, Fitchburg (February 5, 2013)

First Set of Information Requests From
The Pipeline Engineering and Safety Division of
The Department of Public Utilities

Request No. IR PL 1-6:

Provide records for any maintenance or replacement work performed on the gas main on Linwood Street, from January I, 2009 to February 6, 2013.

Response:

During the period between January 1, 2009 and February 6, 2013 the only maintenance or replacement work performed was the main replacement on February 6, 2013. Please see attached document IR PL 1-6 Attachment A for detailed work order information.

Person Responsible: Dan Golden, Stacey Kilroy, Christopher LeBlanc

Date: April 18, 2013

DTEX Test Log

Test #:	00008	FREDETTE ST		User:	DAVE JOYCE
Test Start Date:	01-31-13	FREDETTE ST		Notes:	
Test Start Time:	08:25:50	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.00%	GARDNER		Serial Number:	56778
RDL Result:	0.02%	MA	01440	Test Error Code:	**
Test Time (Sec):	23	Altitude (ft): 1000		Test Temp (C):	12

Test #:	00009	KLONDIKE AVE REG		User:	DAVE JOYCE
Test Start Date:	01-31-13	KLONDIKE AVE		Notes:	
Test Start Time:	09:18:43	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.01%	FITCHBURG		Serial Number:	56778
RDL Result:	0.05%	MA	01420	Test Error Code:	**
Test Time (Sec):	26	Altitude (ft): 500		Test Temp (C):	12

Test #:	00010	SAWYER PASSWAY REG		User:	DAVE JOYCE
Test Start Date:	01-31-13	SAWYER PASSWAY		Notes:	
Test Start Time:	09:50:53	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.01%	FITCHBURG		Serial Number:	56778
RDL Result:	0.06%	MA	01420	Test Error Code:	**
Test Time (Sec):	20	Altitude (ft): 500		Test Temp (C):	12

Test #:	00011	DIPPIN DONUTS		User:	CROTEAU JONATHAN
Test Start Date:	02-05-13	235 LUNENBURG ST		Notes:	
Test Start Time:	19:20:11	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.04%	FITCHBURG		Serial Number:	56778
RDL Result:	0.09%	MA	01420	Test Error Code:	**
Test Time (Sec):	43	Altitude (ft): 500		Test Temp (C):	8

Test #:	00012	ALDRICH		User:	DAVE JOYCE
Test Start Date:	02-06-13	209 LUNENBURG ST		Notes:	
Test Start Time:	07:55:02	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.00%	FITCHBURG		Serial Number:	56778
RDL Result:	0.03%	MA	01420	Test Error Code:	**
Test Time (Sec):	21	Altitude (ft): 500		Test Temp (C):	18

EXHIBIT 16

Unitil gas odorant reading records prior to and after the Incident

DTEX Test Log

Test #:	00001	ASH ST WATER DEPT		User:	DAVE JOYCE
Test Start Date:	01-30-13	ASH ST		Notes:	
Test Start Time:	12:53:02	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.01%	TOWNSEND		Serial Number:	56778
RDL Result:	0.03%	MA	01469	Test Error Code:	**
Test Time (Sec):	28	Altitude (ft): 500		Test Temp (C):	18

Test #:	00002	WEST TOWNSEND WATER		User:	DAVE JOYCE
Test Start Date:	01-30-13	MAIN ST		Notes:	
Test Start Time:	13:09:41	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.02%	TOWNSEND		Serial Number:	56778
RDL Result:	0.05%	MA	01474	Test Error Code:	**
Test Time (Sec):	21	Altitude (ft): 500		Test Temp (C):	16

Test #:	00003	1257 MAIN ST		User:	DAVE JOYCE
Test Start Date:	01-30-13	1257 MAIN ST		Notes:	
Test Start Time:	13:22:35	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.02%	ASHBY		Serial Number:	56778
RDL Result:	0.07%	MA	01431	Test Error Code:	**
Test Time (Sec):	21	Altitude (ft): 1000		Test Temp (C):	14

Test #:	00004	BURBANK OFFICE BLDG		User:	DAVE JOYCE
Test Start Date:	01-30-13	BURBANK ST.		Notes:	
Test Start Time:	13:41:26	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.02%	FITCHBURG		Serial Number:	56778
RDL Result:	0.06%	MA	01420	Test Error Code:	**
Test Time (Sec):	21	Altitude (ft): 1000		Test Temp (C):	13

Test #:	00005	ASHBURNHAM HILL PLE		User:	DAVE JOYCE
Test Start Date:	01-30-13	ASHBURNHAM HILL RD		Notes:	
Test Start Time:	13:51:48	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.05%	FITCHBURG		Serial Number:	56778
RDL Result:	0.10%	MA	01420	Test Error Code:	**
Test Time (Sec):	17	Altitude (ft): 1000		Test Temp (C):	13

Test #:	00006	ASHBURNHAM ST PLE		User:	DAVE JOYCE
Test Start Date:	01-30-13	ASHBURNHAM ST		Notes:	
Test Start Time:	14:06:45	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.07%	FITCHBURG		Serial Number:	56778
RDL Result:	0.14%	MA	01420	Test Error Code:	**
Test Time (Sec):	18	Altitude (ft): 500		Test Temp (C):	10

Test #:	00007	ASHBURNHAM ST PLE		User:	DAVE JOYCE
Test Start Date:	01-30-13	ASHBURNHAM ST		Notes:	
Test Start Time:	14:07:35	<Blank>		DTEX Model:	DX1000G
TDL Result:	0.03%	FITCHBURG		Serial Number:	56778
RDL Result:	0.06%	MA	01420	Test Error Code:	**
Test Time (Sec):	14	Altitude (ft): 500		Test Temp (C):	10